SUMMARY

MAINTENANCE DREDGING OF THE FEDERAL NAVIGATION CHANNEL AT TOLEDO HARBOR, OHIO

( ) DRAFT (X) FINAL ENVIRONMENTAL STATEMENT

RESPONSIBLE OFFICE: U.S. ARMY ENGINEER DISTRICT, DETROIT
CORPS OF ENGINEERS
P.O. BOX 1027
DETROIT, MICHIGAN 48231

1. NAME OF ACTION: (X) ADMINISTRATIVE ( ) LEGISLATIVE

2. DESCRIPTION OF ACTION: Maintenance dredging of Toledo Harbor, Ohio, is performed annually by hopper dredges. During a 10-year period, 1966-1975, a total of 15,513,070 cubic yards of silt, clay, and sand has been removed and placed into the confined disposal facilities. Beginning in 1976, disposal operations will be into a new confined disposal facility in Maumee Bay. This material is removed from the navigation channel that is approximately 25 miles in length; extending from the deep water in Lake Erie to a point about seven miles upstream of the mouth of the Maumee River.

3. (A) ENVIRONMENTAL IMPACTS: Continued harbor dredging will result in a temporary additional degradation of the water quality. Disposal of the dredged sediments may affect the aquatic ecosystem. Continued economic and social stability of the area is dependent upon commercial navigation which requires maintenance dredging of the channel and harbor area.

(B) ADVERSE ENVIRONMENTAL EFFECTS: Increased turbidity and short-term water quality degradation in the area of operation are effects of maintenance dredging. Aquatic life in the dredging areas will be disturbed or destroyed. Disposal of the dredged sediments will alter existing habitats and may otherwise adversely affect the ecological community.

4. ALTERNATIVES: In addition to maintenance dredging by hopper dredges, other dredging alternatives are: (1) remove sediments with other dredge types, (2) dredge the harbor to a lesser depth, or (3) discontinue dredging operations altogether, and (4) watershed management. Implementation of the alternatives will cause economic or social impacts on the Toledo Harbor area. Alternatives to the proposed disposal methods are: (1) disposal of all sediments to open water, (2) deep water (more than 100 feet) dis-

posal, (3) land disposal, and (4) pretreatment of materials. In terms of economic and engineering feasibility, irretrievable resources and minimal ecological disruption, the process of confined disposal for polluted sediments offers the best alternative at the present time. The ultimate solution depends on adequate control of upland erosion and soil runoff.

5. COMMENTS RECEIVED:

Advisory Council on Historic Preservation
Federal Power Commission
U.S. Department of Agriculture - Forest Service
U.S. Department of Commerce
U.S. Department of Health, Education, and Welfare
U.S. Department of the Interior
U.S. Department of the Interior - Fish and Wildlife Service
U.S. Department of Transportation - Federal Highway Administration
U.S. Department of Transportation - U.S. Coast Guard
U.S. Environmental Protection Agency
Ohio Historic Preservation Office
Ohio Historical Society
State of Ohio Environmental Protection Agency
State of Michigan - Department of Natural Resources
Health Planning Association of Northwest Ohio
Lake Erie Advisory Committee
National Association of River and Harbor Contractors
Toledo Metropolitan Area Council of Governments
Toledo Naturalists' Association

6. DRAFT STATEMENT TO CEQ 27 DECEMBER 1974.
FINAL STATEMENT TO CEQ 17 MAY 1976.

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1. PROJECT DESCRIPTION

A. Scope of Work

1.01 Maintenance dredging of the navigable waterways in the Great Lakes is to be performed by the U.S. Army Corps of Engineers as authorized by Congress. An average of approximately 12,000,000 cubic yards of sediments must be removed per year from 64 harbors and 157 miles of improved channels. The purpose of maintenance dredging is the restoration of authorized depths in the established projects. These waterways provide vital transportation routes for bulk materials, economic stimulus, and increased opportunities for recreational utilization of water resources.

1.02 This action proposes the continuation of maintenance dredging for the Toledo Harbor, Ohio, Federal Navigation Channels. Toledo Harbor is situated at the southwest end of Lake Erie, 99 miles westerly from Cleveland, Ohio, and 55 miles south of Detroit, Michigan. The navigation channels of the harbor are approximately 25 miles in length, extending from the deep water in Lake Erie to a point about seven miles upstream in the Maumee River, just downstream from the I-75 Bridge (see Figure 1).

1.03 Dredging is performed annually to remove the shoaling that develops in the channels from the sediments deposited by the Maumee River as it enters the Maumee Bay sector of Lake Erie. Beginning in 1976, the dredged material will be confined in the new 242-acre disposal facility located 355 feet southeast of the Toledo Harbor navigation channel in Maumee Bay and adjacent to the proposed Toledo-Lucas County Port Authority disposal area and the Toledo Edison disposal area. During the last 10 years of maintenance operations, a total of 15,513,070 cubic yards of sediment have been removed and placed into the existing island disposal facility, riverside disposal sites and into open water dumping grounds.

B. Authority

1.04 Authorization for this existing navigational channel, with turning basins and a widened area, was by the River and Harbors Acts of March 3, 1899; June 25, 1910; August 30, 1935; May 17, 1950; September 3, 1954; July 3, 1958; and July 14, 1960. These acts provide for a 28-foot deep channel, 500 feet wide, and about 18 miles long, extending from the mouth of the Maumee River to the flashing, unnumbered black and white spar, vertically striped mid-channel marker in Lake Erie. Other provisions are a widened area of 38.6 acres opposite the terminal and railroad docks; a river

channel 27 feet deep and 400 feet wide from the mouth of the river to mile 3; then a channel 400 feet wide from mile 3 to 6.5 with depths of 27 feet over a minimum width of 200 feet, and 25 feet over the remainder of the 400 foot channel width; then a channel 25 feet deep, 200 feet wide, upstream about .5 mile to the upper limit of the project just downstream from the I-75 Bridge; for a turning basin 750 feet wide, 800 feet long and 20 feet deep, opposite the American Shipbuilding docks; a turning basin just upstream from the Old Fassett Street Bridge which is generally semi-circular in shape with a 730-foot radius, 27 feet deep; finally, for a turning basin at the upper project limit, 18 feet deep covering an area of 8.25 acres. Also provided for is clearing the sailing course between the Maumee Bay Channel and the East Outer Channel, Detroit River to a depth of 28 feet over a width of 1,200 feet.

1.05 Maintenance dredging projects are reviewed and evaluated under the following laws: Federal Water Pollution Control Act of 1972, the National Environmental Policy Act of 1969, The Fish and Wildlife Act of 1956, the Fish and Wildlife Coordination Act of 1958, the Marine Protection Research and Sanctuaries Act of 1972, the National Historic Preservation Act of 1966, the Endangered Species Act of 1973, as well as the various Congressional Acts authorizing construction and maintenance of the Federal project.

C. The Plan

1.06 Description of Dredging Operations. Annual maintenance dredging of Toledo Harbor is normally performed by Government owned and operated hopper dredges. Disposal of the dredged material will be into the newly constructed 242-acre diked confined disposal facility.

1.07 A hopper dredge (Figure 2) is designed to hydraulically dredge material while in motion. The two dragarms are lowered and the material sucked up through the dragarms and pumped into the hoppers. Pumping continues until the hoppers are filled to capacity, which is dependent upon the compactness, density, grain size, degree of retainability and the maximum loaded draft of the vessel. The hoppers are equipped with overflows to allow the excess water and silt to be discharged back to the origin until the predetermined load is attained. Then the dredge moves to the disposal site. Disposal of the polluted material is accomplished by pumpout through an 18-inch discharge pipeline to the confined disposal site. (The material previously classified as unpolluted was dumped at an open lake site through hopper doors located at the bottom of the hoppers.) The residue materials are flushed by jets of water and the rinse water discharged into the confined disposal facility. Attempts to attain maximum load with minimal overflow and precautions to eliminate any spill during pumpout are part of normal operations.

1.08 The overall dimensions and capacity of hopper dredges vary. Selection is made to suit the operations for which they are required. They

range in length from 216 to 339 feet with capacities between 885 and 2,720 cubic yards. Three hopper dredges have been used to restore and maintain the Toledo Harbor Area: HAINS, HOFFMAN and MARKHAM. The HAINS and HOFFMAN are sister dredges having overall lengths of 215'10" and widths of 40'4"; there are four divided hoppers that have a total capacity of 885 cubic yards; draft light is 9'5" and loaded is 13'0"; speed is 14.1 mph light and 13.1 mph loaded; a 410 HP motor is used to pump and suck up the material through two dragarms and into the hoppers, as well as to discharge the material through an 18" pumpout line; and maximum dredging depth is 35 feet. The MARKHAM is a larger vessel with a length of 339'1"; width of 62'0"; uses four diesel electric engines of 1325 HP each for propelling power and two 1000 HP pumps for pumping the material into and out of the hoppers; capacity of the hopper is 2,720 cubic yards; maximum dredging depth is 45 feet; speed light is 16.7 mph and loaded is 14.4 mph; and the draft is 13'8" light and 19'4" loaded.

1.09 Disposal Sites (Figure 3). The original disposal site for the polluted materials was developed in 1961 at Riverside Park and was furnished and diked by the City of Toledo. In 1961-62 a confined island disposal site was constructed in Maumee Bay near the mouth of the River, and another was located along the north bank of the River immediately downstream of Columbus Street (Penn 8). Another confined river site (Penn 7) was constructed on the north shore of the river, about 1.5 miles above the mouth. Each of the sites include a weir to provide for runoff of excess water.

1.10 Riverside Park was the disposal site utilized for material from the maintenance dredging of the Maumee River. Pile clusters were constructed for mooring the dredge and about 4,000 feet of 24 inch pipe obtained for the discharge line. About 250,000 cubic yards of material was deposited in 1961. The site is no longer in use.

1.11 The perimeter dike for the Penn 8 site was constructed to a height of 15.4 feet above IGLD, encompassing about 33 acres for a residual capacity of approximately 900,000 cubic yards.

1.12 The nearly rectangular island disposal site (Figure 4) is located in Maumee Bay on the north side of the channel immediately lakeward of the mouth of the river and covers an area of 150 acres. It is bordered on the south by the shipping channel and on the other three (3) sides by the shallow waters of the inner bay. The perimeter dikes were originally constructed from the sandy clay material existing from previous deepening of the navigation channel. Raising and improvement of the perimeter dike has been accomplished three times to increase the capacity of the disposal site. The dikes have been armored with riprap to deter possible erosion from wind and waves.

1.13 The island facility is nearly filled and will be used for disposal by the small hopper dredges until the facility is leveled to

the established elevation of 20 feet above the Lake Erie datum plane of 568.6 feet IGLD. To start the pumpout at the island facility, the dredge moors at the pile clusters on the channel side of the island and utilizes a 9 foot pipeline section to connect to the 160 foot pipeline that extends across the pumpout barge. This is joined to the pipeline that extends into the diked area. When the supernatant water reaches the appropriate level, it flows over the weir, located in the dike near the northeast corner and into the receiving waters of Maumee Bay.

1.14 A new confined disposal site is under construction and covers an area of 242 acres. It is located 355 feet southeast of the Toledo Harbor navigation channel and is adjacent to the existing Toledo Edison diked disposal area and the proposed Toledo-Lucas County Port Authority dike fill area. This confined disposal facility constructed under PL 91-611 to accommodate a ten-year maintenance dredging program is scheduled for use in 1976. This project is discussed in the Final Impact Statement, "Confined Disposal Facility for Toledo Harbor, Ohio."

1.15 The previously classified unpolluted materials were disposed of in open water in Lake Erie at the west corner of an area 2,600 feet by 2,600 feet square (155 acres). This area is 11-1/2 miles from the Manhattan Front Range Light on a course heading 62°. The minimum depth of the area is 20 feet. Unless the materials improve and EPA reclassifies the area, this site will no longer be used.

1.16 The Riverside Park, Penn7, and Penn 8 disposal sites, all located on the north bank about 2 miles upstream from the mouth of the Maumee River, have been filled. The island facility is nearly filled and will be used only for the loads from the smaller hopper dredges so as to allow sufficient settling time prior to overflow at the weir.

1.17 Materials to be Dredged. Annual maintenance dredging of Toledo Harbor is normally performed by Government-owned and operated hopper dredges to remove the shoaling from the harbor river and inner and outer bay channels. An estimated total of 1,551,000 cubic yards is to be removed annually.

1.18 Most of the deposit on the bottom of Maumee Bay is described as silt and clay, except for nearshore where wave scour has exposed a harder glacial till. Samples from the area indicate the deposits are up to 10 feet thick and are soft and spongy, with organic material close to the mouth of the Maumee River. The sediments, for the most part, are comprised of about 80 percent silt and clay and 20 percent sand, with a higher content of silt and clay in the Maumee River and of sand in the Maumee Bay Channel. The major portion of the sediments are derived from river bank and land sheet erosion and carried to the area by the Maumee River and deposited at locations where the current has decreased.

Contaminants in solution and suspension can be attributed to partly treated domestic and industrial wastes; agricultural wastes derived from fertilizers, pesticides, animal wastes, etc.; urban storm water runoff; and wastes from small craft and deep-draft vessels utilizing the waterway and adjacent areas.

1.19 In February 1974, the U.S. Environmental Protection Agency (EPA) classified the dredge material taken from the upstream limit in the Maumee River to the 5 mile buoy in the approach channel as polluted and unacceptable for open lake disposal. The remaining portions of the approach channel were considered unpolluted and suitable for open water disposal (Figure 1). (See correspondence in Appendix C.) In response to the Draft Environmental Statement, EPA questioned this procedure and stated the need to sample and evaluate the sediments lakeward of mile point 5. In September 1975, EPA collected nine sediment samples lakeward of the 4.5 mile limit. Based on the data obtained from their surveys of 1973 and 1975, they concluded that none of the sediments lakeward of the upstream limit of the project are suitable for open lake disposal. The Corps will confine all materials dredged from the Toledo navigation channels until a reclassification is determined.

D. *Economics*

1.20 Maintenance operations for the Federal Navigation Channels at Toledo Harbor are integral to the original project authorization. Basic Corps policy governing the programming of operation and maintenance of Civil Works projects provides that each waterway and harbor project will be adequately maintained consistent with the reasonable needs of existing commerce and traffic as long as the project remains economically justified. In his annual budget request the District Engineer justifies the needs for maintenance funds based on the conditions and utilization of each project. As indicated in Tables B, C, and M, the traffic and volume of cargo in the Toledo Harbor clearly meet the criteria for essential maintenance work on a periodic basis.

1.21 During the fiscal 10-year period, 1966-1975, a total of about 15,513,070 cubic yards of silt, clay, and sand has been removed at about $0.45 per cubic yard (Table A). The average cost for dredging and disposal per year was $697,492, ranging from $164,043 in 1966 to handle 1,005,209 cubic yards at $0.16 per cubic yard to $1,400,000 in 1975 for 1,969,081 cubic yars at $0.71 per cubic yard. An estimated 2,023,000 cubic yards are to be removed during calendar year 1976 with disposal into the new confined disposal facility.

1.22 A benefit-cost ratio evaluation will vary from year to year, depending upon the quantity of materials dredged and the value of products shipped. For instance, dollar values for the major commodities shipped

through the Toledo Harbor in 1972 and 1973 totaled $111,139,530 and $131,369,531 respectively. Nor do these figures relate the value of payrolls generated by the harbor facilities.

Table A

TOLEDO HARBOR DREDGING TOTALS
(FISCAL YEAR)

	Quantity (cubic yards)	Total Cost $	Cost/Cubic Yard
1966	1,005,209	164,043	$0.16
1967	1,933,919	523,252	$0.27
1968	2,889,249	828,670	$0.29
1969	1,587,390	570,780	$0.36
1970	921,662	714,269	$0.78
1971	802,745	343,061	$0.43
1972	1,377,022	805,095	$0.58
1973	753,884	631,151	$0.84
1974	1,912,909	994,600	$0.52
1975	1,969,081	1,400,000	$0.71

1.23 The Federal Costs of the Navigation Channels in Toledo Harbor as of 30 June 1975 are as follows:

	Existing Project	Previous Project
New Work	$15,567,147	$1,624,695
Maintenance	36,146,594	0
Total Costs	$51,713,741	$1,624,695

2. ENVIRONMENTAL SETTING WITHOUT THE PROJECT

A. Area Description

2.01 Toledo Harbor, at the western end of Lake Erie, is located at the mouth of the Maumee River. The Maumee River, formed by the confluence of the St. Marys and St. Joseph Rivers at Fort Wayne, Indiana, is 131 miles long. It drains an area of about 6,750 square miles of bordering lands in Indiana, Michigan and Ohio from a basin that is roughly circular in shape and generally flat in relief, and finally empties into Maumee Bay.

2.02 The area adjacent to the Maumee River has been developed to utilize the water resources. This area comprises the business sections of the city, mainly transportation, commerce, and manufacturing. The manufacturing

interests are those associated with automobiles and accessories, glass, excavating machinery, weighing scales, locomotives, electrical equipment and oil refining. Toledo Harbor is chiefly a transshipment point for shipment of coal, grain, and petroleum products, and the receipt of iron ore. Most properties along the riverbank are lined by bulkheads or riprapped the shoreline. Areas that have not been protected show evidence of severe erosion.

2.03 Maumee Bay owes its physical existence to two spits extending into the lake and separating the Bay from Lake Erie: North Cape (the northern spit) that extends southerly from the Michigan shoreline for four miles, and Little Cedar Point, a smaller spit is on the southeastern corner of the Bay. Landward of North Cape, the water area is shallow, comprised of bars and marshes; landward from Little Cedar Point the area is low-lying and generally marshy (Figure 3).

2.04 The large island disposal facility previously described is located at the river mouth bordering the northern edge of the channel. A string of islets extends outward into Maumee Bay on either side of the navigation channel, much like highway markers. These islets were formed from the dredging spoil of past years. Most of them are presently topped by the high water levels prevailing in Lake Erie with only their vegetative growth revealing their existence.

B. Geology and Topography

2.05 The Maumee Basin bedrock underlies the Toledo area at depths up to 200 feet and is mostly composed of limestones and dolomites from the Devonian and Silurian periods with the northwestern part of the area composed of Mississippian and Devonian shales.

2.06 The Toledo area was glaciated and is characterized by low relief and glacial till. The topography is extremely flat with less than a foot change in elevation in a square mile and varies from undulating plains to hills of low relief. The Maumee Lake plain on which Toledo is located was once a vast swamp known as the Great Black Swamp. Early settlers deforested the land after draining it.

2.07 Soils in the basin are artificially drained to accommodate farming. The soils are moderately fine to fine in texture and formed from previous lake sediments and glacial till material. Though the land is gently sloping, these fine textured sediments are susceptible to erosion. Certain local areas are naturally well drained and composed of sand and gravel.

2.08 Deposits of larger gravel were formed approximately 12,000 years ago when water velocity of the Maumee River was relatively fast. Today the river velocity is slower and sands, silts and clay are being deposited in Maumee Bay, which is classified as a drowned river mouth.

2.09 Maumee Bay is essentially a wave scoured beach developed by inundation of the shoreline of southwestern Lake Erie. In the early stages of inundation, Maumee Bay was eroded by waves to more or less a uniform depth. As inundation continued, and the Maumee River brought heavy sediment loads downstream, the bay floor was covered with these deposits.

2.10 This basin area is a flatland where agriculture is one of the major sources of commerce. Soybeans and corn are the two principal crops, which leave the soil bare and vulnerable to open erosion during the winter. Consequently, extensive sheet erosion occurs and the silt that is washed away is carried by the Maumee River into the Toledo Harbor where it settles out.

C. Lake Levels

2.11 Lake Erie is a shallow body of water and, due to its long axis, is affected by strong winds and gales resulting in the water-level fluctuations of the Maumee Bay River and the river estuary. The wind can cause the water to be high at one end, low at the other. Winds recorded at Toledo Harbor show that from May to November the southwest wind is prevalent. There are changes in the spring and fall winds. In the spring months, the winds occur from the southwest and southeast at about equal amounts. Winds in the fall are predominantly from the southeast, with a small percentage from easterly directions.

2.12 Fluctuations in lake levels in the western basin, including Maumee Bay, occur both annually and over a period of many years. The yearly high levels prevail during the summer and the lows in the winter, resulting in a total annual average fluctuation of 1.2 feet (18). A change as great as 6 feet can occur due to storm action.

2.13 In the last 5 years, the maximum monthly stage of Lake Erie has been between 3.03 and 4.91 feet above Low Water Datum, whereas the minimum monthly stage has been between 1.91 and 3.17 feet above Low Water Datum. From 1860-1974, there was a difference of 6.02 feet between the highest (573.51) and lowest (567.49) monthly mean (5). For 1975, the difference between the highest (576.52) and lowest (573.41) monthly mean stages was 3.11 feet. In April 1974, the highest instantaneous level of 576.58 feet for Toledo was reached.

2.14 In addition to the annual fluctuations, oscillations (seiche), produced by a combination of wind and barometric pressure changes accompanying squalls, result in changes in lake levels that last for periods of a few minutes to a few hours. Strong winds of sustained speed, duration and direction drive the surface water forward and raise the level on the lee shore and lower it on the weather shore. Because Lake Erie is so shallow, insufficient depth is available to allow reverse currents to return the upper water to the initial locations causing water to pile up and increase

the depth at one end. The observed wind produced fluctuations, in combination with prevailing high or low water, range between extremes of 6-1/2 feet above and 7-1/2 below Low Water Datum. Ice jams near the mouth of the Maumee River have raised the water in the river as high as 12 feet above Low Water Datum.

2.15 Large water-level rises at Toledo are not as frequent as at the eastern end of the lake because southwest winds predominate over northeast winds. The frequency of occurrence for various water level rises above mean lake level due to any cause has been presented by the U.S. Lake Survey. This data indicates that for frequencies of less than 50 months, water level rises increase rapidly to about 4.2 feet. For frequencies greater than 100 months, the water level rises are essentially the same or about 4.6 feet. This would indicate that a wind tide in excess of 4.6 to 4.9 feet would be an exceptional event.

D. Currents

2.16 The primary generating forces that produce the currents in Toledo Harbor are short-period water-level oscillations (wind tides, surges and seiches) and discharge from the Maumee River. Measurements of flow by current meters and by drogues show the currents to be similar to tidal currents, i.e., the direction of the flow periodically reverses and the speed is cyclic. Within the shipping channel outgoing currents of 0 to 1.48 feet per second (ft/sec) have been measured. When the river discharge is moderate (about 7,062 cubic feet per second (cfs)) the mean velocity at the mouth of the Maumee River is in the .3 to .49 ft/sec range. However, when the discharge is low (less than 353 cfs) the current is aimless. The Maumee River has an average flow of 8,400 cfs.

2.17 Currents also vary with depth. It has been noted that surface currents on the Maumee River may be reversed from deeper currents. The same situation may be expected in the Bay but to a lesser extent. Basically, the reversals in the river are directly related to the discharge of the Maumee River. The turbulence accompanied by these fluctuations picks up and redistributes the fine sediment. Water levels in the lower Maumee River (to about river mile 8) are influenced by the water-level fluctuations occurring in the western basin of Lake Erie and Maumee Bay.

E. Population

2.18 A total population of the three-county Toledo Standard Metropolitan Statistical Area in 1970 was 692,571, with 55.4% or 384,015 people in the City of Toledo. Population forecasts predict increased growth in the northwest and southwest areas, a loss in older areas, and slower growth in the south and southeast, including the City of Oregon.

F. Commerce

2.19 In the Great Lakes, Toledo Harbor handles the third largest amount of tonnage with a total of 21,556,519 tons carried in 1974 (10). As can be observed from Table B, the annual commerce for Toledo Harbor has had an almost unbroken decline since 1965. Toledo is still one of the major land transportation centers in the United States and an important transshipment point. It is recognized as the third largest rail center in the country, served by 11 rail lines. Many of these railroads connect directly with coal mines in Kentucky, West Virginia and southern Ohio. Loading docks at the mouth of the Maumee River transfer coal from rail cars to cargo vessels. The Toledo-Lucas County Port Authority owns and operates a large coal transshipment dock as well as other large general cargo and grain shipping facilities. Table B_1, indicates the relative intensity of commercial vessel traffic by draft during 1974.

TABLE B

COMPARATIVE STATEMENT OF TRAFFIC[10]

Year	Tons	Year	Tons
1965	45,016,077	1970	31,932,493
1966	43,932,128	1971	27,310,667
1967	38,830,236	1972	25,248,550
1968	34,639,837	1973	24,921,753
1969	31,117,975	1974	21,556,519

Table B_1

1974 Vessel Traffic by DRAFT SIZE

DRAFT REQUIREMENT RANGE	VESSEL TRIPS	COMMERCE TONS
28-26	146	1,645,910
26-24	228	3,294,017
24-22	201	2,150,149
22-20	982	8,805,029
20-18	682	3,368,262
18-16	519	1,776,800

2.20 Table C is a breakdown of the commerce through the harbor during the last eight years. The major commodities handled in order of volume are as follows: coal, iron ore, and grain with intermittent fluctuations in general cargo, petroleum products and miscellaneous bulk commodities. The figures indicate declining tonnages which are the result of diversion of bulk mineral commodities, mainly coal, to other modes of transport as well as strikes which have limited the port's cargo handling capabilities.

TABLE C

TOLEDO HARBOR COMMERCE, 1967-1974[10]

(in short tons)

Year	Coal	Iron Ore	Grain	General Cargo	Petroleum Products	Miscellaneous Bulk	Total
1967	29,607,245	5,017,826	1,642,140	793,943	1,171,829	597,253	38,830,236
1968	23,907,013	5,672,792	2,513,057	771,938	1,056,972	738,065	34,659,837
1969	20,683,141	5,602,108	2,292,186	717,979	939,351	883,210	31,117,975
1970	21,779,936	6,006,182	1,889,943	651,110	793,312	812,010	31,932,493
1971	17,200,861	5,041,617	2,557,229	884,639	798,721	827,600	27,310,667
1972	14,997,657	5,403,509	2,671,529	801,174	769,080	605,601	25,248,550
1973	14,514,434	6,477,401	1,555,746	1,003,079	671,058	700,035	24,921,753
1974	12,806,616	5,456,659	1,478,653	141,779	820,135	852,677	21,556,519

G. Water Quality

2.21 Water quality problems are principally related to organic or oxygen-consuming wastes created by municipalities, industries and agricultural sources. Sediments, evolving from erosion, contribute nutrients from fertilizers and pesticides to the degradation process. Degraded water quality restricts the water utilization for water supply, fishing and body contact recreation and discourages development of the adjacent areas, especially for recreational purposes.

2.22 Specific water quality problems are identified as high bacteria counts, low dissolved oxygen levels, thermal loadings, high turbidity, nutrient (nitrogen and phosphorus) concentrations at levels that stimulate algae growth and development, and significant concentrations of pesticides and toxic metals.

2.23 Erosion and sedimentation increase the water quality problem. Because of the insufficient amount of organic matter returned to the soil from crop rotation, the soil does not retain the water as readily. Consequently, there is excessive surface runoff that transports loads of suspended sediments to the river and, due to the nature of the fine, clay soils, remains in suspension for long periods of time. An average of about 1.2 million tons, or 25 per cent, of sediment to Lake Erie is contributed from the Maumee River.

2.24 The Water Quality Standards, as adopted by the Environmental Protection Agency of the State of Ohio, became effective January 8, 1975, and have been accepted by the U.S. Environmental Protection Agency. These standards are applicable for the waters of Maumee River and the Bay (Figure 5) and are illustrated in Appendix A. Equally important are the State of Ohio Standards for Aquatic Life (Warm Water Fishery) as found in Appendix B.

2.25 A survey was conducted in 1967 by U.S. Lake Survey in the Maumee River and at the open bay disposal site during the dredging operations. Then in 1973 U.S. EPA conducted a survey at the mouth of the Maumee River. Results of these surveys are tabulated in Table D. This gives an indication of a continuous problem of enrichment by nutrients, deficiencies in dissolved oxygen, and high bacteria counts.

2.26 Another waste quality problem of the lower Maumee River is thermal loadings by industrial cooling water. Temperature profiles constructed from data supplied by the Toledo Division of Water Reclamation, and extending from Buoy 37 (2.7 miles out in the Bay) upstream for a distance of six miles, show summer thermal loadings increased as much as 5 Fahrenheit degrees or greater above ambient temperatures over as much as two miles of the river. The impact of thermal loading is influenced by river flow with lower flows experiencing greater temperature rises.

2.27 Thermal loading of the Maumee River gives a corresponding decrease of dissolved oxygen (DO). DO profiles along the lower Maumee show a pronounced sag in DO concentrations corresponding to the thermal loadings. Lowest values are reached near the river mouth and then recover along the shipping channel. Maximum recovery, in some cases, does not take place till beyond Buoy 37. Upstream summer DO concentrations are often below the state standard of 3.0 mg/l presenting a barrier to the migration of fish.

2.28 During 1973, the Center for Lake Erie Area Research (CLEAR) at Ohio State University was contracted by U.S. EPA to conduct a comprehensive monitoring program of biological and water quality parameters in Lake Erie. This is a three-year study and of the nine cruises conducted in 1973, two investigated one station in western Lake Erie in Maumee Bay just north of the navigation channel. It is theorized the limited data obtained for

TABLE D

WATER QUALITY IN THE MAUMEE BAY AREA[15]

Parameter	Maumee River	Maumee River Mouth (C&O Railroad Dock)*	Open Bay	Ohio EPA River Standards
pH	7.38-8.09	7.20-8.50	7.84-8.39	6.0-9.0
Mean		7.71		
Dissolved Oxygen	2.20-5.26	1.6-12.6	9.27-14.32	>4.0
Mean		7.5		>5.0
Dissolved Oxygen (% saturation)	6%-40%	--	51%	--
Dissolved Solids	311-553	242-823	159-282	<750
Mean		427		500
Suspended Solids	11.8-547.4	--	36-62	--
Turbidity (JTU)	--	7.0-175.0	--	--
Mean		60.3		--
Coliform Group (Counts/100 ml)	10^4-10^6	--	10^2-10^5	--
Fecal Coliform (Counts/100 ml)	10^2-10^5	10-6500	--	<400/100 ml
Mean		1180		--
Nitrate Nitrogen	3-39	.9-8.2	6-15	<8
Mean		4.6		--
Phosphate	0-5	.25-.86	0.2-1.5	--
Mean		.42		<avg 1(a)
Chloride	42-44	15-64	12-25	<250
Mean		31.3		--
Conductance ($umhos/cm^2$)	640-740	--	480-600	--

Note: Values are in mg/l unless otherwise noted.

* U.S. EPA Data

(a) - value is phosphorus

western Lake Erie is representative of the waters in Maumee Bay. In the western basin nutrient-rich water appears to have originated from the Maumee, Raisin and Detroit Rivers and exhibits a zone of high concentrations of total phosphorus at all depths that is uniformly vertically distributed. Total inorganic nitrogen increases in concentration with depth. In the fall after turnover, concentrations were relatively uniform from top to bottom. Figure 6 notes the sampling station and Table E lists the data.

TABLE E

NUTRIENT CONCENTRATIONS IN 1973 LAKE ERIE WATER SAMPLES
(August and October)

Station	Depth Zone	Depth Feet	Total Phosphorus (PPB) Cruise 5	Total Phosphorus (PPB) Cruise 7	Total Inorganic Nitrogen (PPB) Cruise 5	Total Inorganic Nitrogen (PPB) Cruise 7
	S	3.3	34.9	101.2	27	116
70	LE	13.1		72.7	106	405
	B	19.7	50.3	72.6		129

S - Surface, - 3.3 feet below
LE - Lower Epilimnion
B - Bottom - 3.3 feet above

2.29 Better municipal and industrial waste treatment procedures, and improved agricultural management should ultimately create improved water quality.

H. Sediment

2.30 River bank and land sheet erosion are the major sources of the bottom sediments in the Maumee River and Bay. According to the Federal Water Pollution Control Administration (FWPCA), now EPA, the Maumee River averages 2,212,000 tons per year of total solids, of which some 1.2 million tons is carried into Maumee Bay. The low water transparency is attributed to the sediments being fine-grained silt and clay. Clay minerals, in particular, have a marked affinity for ionic absorption. Thus these sediments readily accept certain forms of pollutants. Sources of this pollution are agricultural runoff, the Bay View Sewage Treatment Plant, and overflow from the Toledo combined sewers. The long-term pollution from agricultural runoff is reflected in the high levels of volatile solids, ammonium nitrogen, and total phosphorus. It is interesting to note that Maumee Bay is relatively free of mercury pollution (21).

2.31 In 1967, the harbor was sampled (Figure 6) and analyzed by the Great Lakes Research Center, U.S. Lake Survey, for bottom sediments, biological data and water samples. Table F is a summary of the characteristics of the dredged material in the Maumee River (14). The sediments in the Maumee River were high in organic material, as indicated by an average volatile solids content near 8 percent.

TABLE F

1967 MAUMEE RIVER DREDGED SEDIMENT CHARACTERISTICS[14]

Parameter	No. of Samples	Range	Mean	EPA Criteria
% Volatile Solids	27	5.8-10.5	8.3	6.0
% Total Solids	27	36.5-71.0	45.2	-
Oil and Grease (mg/kg)	27	500-4,100	1,480	1,500
BOD (mg/kg)	58	540-2,220	1,500	-
pH	67	6.6-7.1	6.8	-
Eh (volts)	67	-0.11-0.0	-0.09	-
Settleability (% 1st hour)	26	0.0-43.0	7.7	-
Settleability (hrs for 90%)	26	20.0-59.0	41.5	-

2.32 During the 1970 mercury study (23), one sample was collected in the Maumee River and one in the navigation channel (Figure 6). Both samples were analyzed for heavy metals (Table G). Toxic metals can be made available to the overlying water due to physical, chemical or biological processes. Metals have been known to re-enter the overlying water through wave action, velocity fluctuations and other water turbulences. Should pH, temperature and other metal concentrations be at the proper levels, these metals can be resolubilized. Further information is needed to determine if the metals would be introduced into the food chain and affect the aquatic organisms. The metal concentrations are higher than the natural environment and can be attributed to the industrial and commercial discharge into the lower Maumee River for a long period of time.

TABLE G

1970 TOLEDO HARBOR HEAVY METALS[23]

(mg/kg Dry Weight)

	Maumee River	Navigation Channel
Cadmium (Cd)	<30	<30
Chromium (Cr)	100	24
Copper (Cu)	79	27
Iron (Fe)	35,600	17,800
Lead (Pb)	140	34
Magnesium (Mg)	12,600	15,000
Manganese (Mn)	590	410
Mercury (Hg)	<1.0	<1.0
Nickel (Ni)	50	40
Zinc (Zn)	330	96

2.33 In 1973, EPA conducted a one-day survey of ten stations in the Maumee River and lakeward about five miles in the Maumee Bay navigation channel as located on Figure 6. Bottom sediment samples were collected and analyzed for chemical and benthic parameters (Table H). All of the bottom sediments contained concentrations of COD (Chemical Oxygen Demand), Total Kjeldahl Nitrogen, per cent Volatile Solids and Zinc that were above the EPA suggested criteria.

2.34 Due to the U. S. Environmental Protection Agency's desire to re-evaluate those portions of the outer harbor previously classified as unpolluted, a coordinated survey with the Corps and the U. S. EPA was conducted in September 1975. The results are tabulated on Table I and K and the sampling stations located on Figures 6 and 7. The data from the 1973 and 1975 surveys were evaluated by the U. S. EPA with the conclusion that none of the sediments lakeward of the upstream limit of the federal project are suitable for open lake disposal. The Corps will confine all material dredged from this project until otherwise directed.

TABLE H

1973 TOLEDO HARBOR BOTTOM SEDIMENTS*

(mg/kg Dry Wt)

Station Number	% Volatile Solids	COD	Total Kjel-N	Total Phos.	Oil & Grease	Arsenic	Lead	Zinc	Mercury	Iron	Cadmium	Chromium	Copper	Nickel
E2-1	10.1	75,591	2,614	1,162	634	5.56	58	121	0.44	12,320	6	64	33	49
E1-2	11.4	83,281	3,090	900	1,048	8.90	60	109	0.30	14,260	6	68	22	38
E1-3	10.4	74,589	3,394	1,160	814	6.36	53	112	0.52	15,170	6	54	26	39
E1-1	10.7	79,236	3,367	689	1,405	5.80	16	117	0.30	12,980	7	74	25	34
Mp 1.23	11.0	83,154	3,925	1,661	5,227	5.66	75	194	0.58	15,510	9	125	47	36
MP 2.32	12.2	74,066	2,809	740	1,223	8.90	63	155	0.23	18,380	8	77	36	50
MP 3.56	10.1	49,294	1,829	1,033	1,156	8.29	43	80	0.33	9,200	7	40	24	27
MP 4.56	9.5	62,968	2,341	948	3,602	7.96	59	82	0.25	9,710	7	46	26	24
MP 5.49	10.3	72,499	2,654	1,261	4,186	10.12	16	105	0.45	11,390	8	50	28	26
MP 6.80	10.0	74,518	2,794	644	919	7.49	34	86	0.26	9,360	8	53	22	25
EPA Suggested Criteria	6.0	50,000	1,000	NA	1,500	NA	50	50	1	NA	NA	NA	NA	NA

• EPA (Michigan-Ohio District Office)

NA - Not Available

TABLE I

1975 TOLEDO HARBOR BOTTOM SEDIMENTS*

(mg/kg Dry Wt)

PARAMETER	TL75-1	TL75-2	TL75-3	TL75-4	TL75-5	TL75-6	TL75-7	TL75-8	TL75-9
Total Solids %	41.4	36.9	39.8	34.6	45.4	33.6	39.4	76.6	46.5
Volatile Solids %	5.99	6.61	6.60	6.62	2.33	9.89	7.12	2.46	4.88
Chem. Oxy. Demand	87,000	100,000	120,000	85,000	22,000	85,000	90,000	38,000	96,000
T. Kjel, Nitrogen	3,500	3,900	4,000	3,500	400	3,300	3,000	290	2,900
Oil-Grease	1,600	1,000	800	1,200	800	1,400	1,000	500	800
Mercury	< 0.1	<0.1	<0.1	0.1	<0.1	0.1	0.2	<0.1	0.4
Lead	18	17	44	39	16	62	64	<5	62
Zinc	148	168	202	178	152	234	240	40	208
T. Phosphorous	1,200	1,100	1,500	920	610	1,100	1,300	340	1,300
Ammonia Nitrogen	340	390	420	290	51	340	380	30	400
Manganese	510	570	610	570	400	610	630	270	420
Nickel	46	52	54	49	45	68	72	28	58
Arsenic	14	12	10	11	7	11	9	7	8
Barium	<40	<40	<40	<40	<40	<40	<40	<40	<40
Cadmium	2.2	1.9	2.2	1.4	1.0	3.6	3.6	<1	3.0
Chromium	53	64	67	72	63	120	95	43	94
Magnesium	14,900	12,600	12,800	13,000	14,800	13,900	13,000	11,100	14,900
Copper	33	39	48	46	123	65	69	34	51
Iron	25,000	27,000	28,000	26,000	17,000	29,000	30,000	8,700	22,000

*EPA Data

I. Aquatic Life

2.35 The bacterial community present in the water of the Toledo Harbor Channels includes levels of coliforms that are unsuitable for body contact. This suggests the presence of enteric pathogens, which represents a potential health hazard.

2.36 The types of primary producers in Maumee Bay are apparently limited by the turbidity which restricts light penetration and by the amount of available substrate on which to develop.

2.37 The greater portion of the bottom is very soft, unstable and silt covered. Shifting unstable bottom sediments, caused by wave and current action, generally limit the propagation of attached algal and macrophyte forms. This limitation excludes a major nuisance filamentous form, Cladophora. A phytoplankton dominated community evolves. The resultant community consists mainly of floating types, the majority being blue-green and green algae with a few desmids and diatoms.

2.38 Benthos data obtained from the 1967 Lake Survey Study (15) and the 1973 and 1975 EPA studies conducted in the Maumee Bay Area (Figure 7) appear to indicate water quality degradation in the study zone. Benthos (Tables J and K) shows a dominance of oligochaetes. Garton (27) described a procedure using the number of oligochaetes to total numbers of individuals (O/I = N) per sample to obtain a water quality index from 0 to 1. High ratios indicate a disturbed aquatic system.

2.39 The presence of oligochaetes does not necessarily indicate pollution (certain species of oligochaetes are intolerant to water quality degradation). However, the absence of other intolerant macroinvertebrates does indicate an environmental problem. River samples from 1967 and 1973 had a numerical index of .98 or greater the majority of times 20/21 (Table J).

2.40 In organically enriched areas, concentrations of oligochaetes as high as 400,000/m^2 have been reported (28). Maximum river values were 23,331/m^2 (Table J). Though these values are not excessive, the almost total absence of other organisms indicates a misbalanced aquatic system. Many factors may be influencing water quality in the river. Industrial and municipal discharge, farm runoff and general land use affect waters in the drainage basin. The macroinvertebrate populations identified at the four locations sampled in 1975 (Table K) were dominated by the pollution tolerant Oligochaeta Limnodrilus sp. The other species present were either pollution tolerant or facultative.

2.41 Water quality in the bay appears slightly better than the river. Numbers of oligochaetes have dropped, probably the result of dilution of contaminants, a decrease in organic matter and the resultant decrease in bacteria which are a food supply for oligochaetes.

TABLE J

BENTHIC COMPOSITION OF MAUMEE RIVER AND BAY DURING 1967[15] and 1973 **

Stations:	River	Oligochaeta[a]		Diptera		Gastropoda		Hirudinae		Other		Oligochaetes	
Date:		Early Fall	Late Fall	Early Fall	Late Fall	Early Fall	Late Fall	Early Fall	Late Fall	Early Fall	Late Fall	Total	Individuals
1967	No. 1	200	175									1.0	1.0
	No. 2	175	275									1.0	1.0
	No. 3	500	350									1.0	1.0
	No. 4	325	400									1.0	1.0
	No. 5	500	500; 1625									1.0	1.0
	No. 6	50	50									1.0	1.0
	No. 7	-	50				25					-	.66
	No. 8	375	50			25						.98	1.0
1973		Spring		Spring									
	MP 6.80		8,294		29							.99	
	MP 5.49		13,428		57							.99	
	MP 4.56		15,558									1.0	
	MP 3.56		23,338		57							.99	
	MP 2.32		6,950		29							.99	
	MP 1.32		12,713		57							.99	

TABLE J (Cont.)

Stations: Date:	Lake	Oligochaeta[a] Nov	Oligochaeta[a] Dec	Diptera Nov	Diptera Dec	Gastropoda Nov	Gastropoda Dec	Hirudinae Nov	Hirudinae Dec	Other Nov	Other Dec	Oligochaetes Total	Oligochaetes Individuals
1967	No. 1	150	275	50	50	25	100	25				.6	.6
	No. 2	125	*	50		75		25				.45	
	No. 3	100	50;250; 1075	75	25;25; 150	125	25;0; 100					.33	.8
	No. 4	225	300	50	50	225	25					.45	.8
	No. 5	100	300	175	250	250	250		75			.40	.34
	No. 6	150	475	175	50	25	100					.43	.76
	No. 7	50	*			125						.40	
	No. 8	150	325	150	375	150	200			25		.32	.36
	No. 9	375	*	125		50						.68	
	No. 10	*	900		725		200		75			.47	
	No. 12	-	*	-		-							
	No. 16	500				75		25				.83	
	No. 17	*	150		100		50				25	.46	
	No. 18	*	600		50							.92	
1973		Spring		Spring		Spring		Spring					
	El-1	6,978										1.0	
	El-3	11,040		114				14				.99	
	El-2	11,926		2,130		14		386				.82	
	E2-1	12,613		3,589		14		14				.78	
1973 Open Water[(22)]		2,631		577		89		8			2	.80	

*No Sample

a. - All values expressed as numbers/m^2 except rate of Oligochaetes/Total Individuals.

- - No life benthos.

** - EPA unpublished data except Open Water[(22)]

TABLE K

1975 TOLEDO HARBOR MACROINVERTEBRATES*

TAXA	NUMBER OF ORGANISMS FOR EACH TAXA			
	TL75-1	TL75-3	TL75-5	TL75-7
DIPTERA				
Chironomus sp.	2	78	3	3
Procladius sp.			2	
OLIGOCHAETA				
Limnodrilus sp.	187	136	106	218
PELECYPODA				
Sphaerium corneum	1			
Anodonta grandis	1	1		
Musculium sp.		5		
GASTROPODA				
Amnicola sp.	1			
Total No. of organisms	192	220	111	221
Total No. of taxa	5	4	3	2

*EPA Data

J. Waterfowl

2.42 The Maumee Bay and River is an important link in the migration corridor from Hudson Bay to the Gulf Coast area. Each spring and fall, migrating ducks and geese utilize the vicinity as a resting area. Each winter, large numbers of arctic ducks (scaups, mergansers, buffleheads, and golden-eyes) move south as the northern waters freeze. The bay area remains relatively free of ice, providing habitat through the winter for these ducks.

2.43 The river bank in the project area has been extensively channelized and developed removing this land as a nesting area. Erie State Game Area, Crane Creek State Park and Metzger Marsh Wildlife Area are all prime breeding and nesting sites in the vicinity of the project.

2.44 Several minor outbreaks of duck poisoning (botulism) on the Toledo Island disposal site have occurred. Anaerobic conditions conducive to the occurrence of botulism are recognized. It is possible to take remedial action should botulism occur on the site. This action is dependent on identifying those conditions favorable to the bacteria as they exist on the site. These conditions include warm shallow water areas, with little or no circulation, and the presence of food sources in the sediments, such as dead invertebrates, which support anaerobic organisms. These bacteria, found everywhere, produce the toxin responsible for "duck sickness" under anaerobic conditions. Remedial actions may include flooding or drying the area. Outbreaks of botulism poisoning may occur during the filling of a disposal facility. At the new disposal facility, the pipeline that will carry the sediment into the dike has been designed and constructed into four fingerlike projections that support four 200-foot lengths of dredge pipe. This system will allow the discharge sediment to be controlled and reduce or eliminate the formation of ponded areas, thereby alleviating the possibility of duck poisoning.

K. Fish

2.45 The Maumee River Basin contains a moderately diversified range of fishery habitat. Crappies, yellow perch, white bass, bluegills and other sunfish, bullheads, largemouth and smallmouth bass, rock bass, walleye, northern pike, and channel catfish comprise the majority of the sport catch in the basin. Other fishes present include suckers, gar, bowfin, carp and stonecats.

2.46 The commercial fish production in Lake Erie is high and sometimes has equalled that of the other four Great Lakes combined. The shallow, warm water, variety of habitats, and the organic richness have helped to stimulate the productivity in Lake Erie. Although major adverse changes have been taking place, the productivity has increased, but the species are becoming dominated by lower-valued species.

2.47 The Maumee Bay's principal commercial fish species are white bass, carp, perch, sheepshead and catfish. According to the U.S. Department of Commerce, Fisheries Division, about 2,490,300 pounds of fish were caught commercially in 1974 as compared to 1,610,500 pounds in 1968. Table L lists the commercial statistics from 1968 and shows the 64% increase from 1968-1974, including a breakdown of the catch from 1974.

TABLE L

COMMERCIAL FISH LANDINGS*
PORT OF TOLEDO

Year	1968	1969	1970	1971	1972	1973	1974
Pounds	1,610,498	1,865,968	1,975,146	Not Available	1,933,595	2,209,728	2,490,314

1974 COMMERCIAL FISHING PRODUCTION
MAUMEE BAY

Common Name	Scientific Name	Pounds (Approximate)
White bass	Marone chrysops	1,193,000
Carp	Cyprinus carpio	896,000
Yellow Perch	Perca flavescens	118,000
Freshwater drum	Aplodinotus grunniens	110,000
Catfish	Ictalurus sp.	95,000
Suckers	Catostomidae	33,000
Quillback	Carpiodes cyprinus	24,000
Bullhead	Ictalurus sp.	9,000
Buffalo	Ictiobus sp.	8,000
Rainbow Smelt	Osmerus mordax	4,000

* Information from U.S. Department of Commerce, Fisheries Division

2.48 Maumee Bay reportedly has spawning beds for such fish as white bass, walleye and perch. A spawning run is reported to exist northwest of the Toledo Edison thermal plume and southeast of the shipping channel. The shipping channel may also serve as a spawning route. The spawning habits of the white bass, catfish, bullheads and carp allow them to avoid or at least greatly minimize the stresses of sedimentation and low oxygen levels that affect coldwater bottom spawners. These fish generally spawn at depths less than 5 feet. Some species make nests for their eggs, and fan and guard them during incubation; others lay their eggs on vegetation off the mud bottom; and still others lay semibuoyant eggs that incubate off bottom,

in the water column. The short incubation period, often 5 days or less, also minimizes exposure to sedimentation, low oxygen levels, disease and predation.

L. History and Archaeology

2.49 The National Register of Historic Places has been consulted and subsequent issues of the Federal Register checked. No National Register properties nor archaeological or historic sites have been identified in the area that could be affected by the maintenance dredging operations. Correspondence has been received from the Ohio State Preservation Officer indicating that the proposed project will not affect any properties, either prehistoric or historic, which are listed on, nominated for, or eligible for the National Register of Historic Places. Surveys would be conducted if necessary.

M. Terrestrial Life

2.50 In the surrounding wetland areas of Maumee Bay many mammalian species have been occasionally observed. These include the opossum, woodchuck, raccoon, skunk, weasel, mink, red fox, prairie deermouse, and the muskrat, which is very common. Representing the reptiles and amphibians are snakes, turtles, frogs, toads and salamanders.

N. Rare and Endangered Wildlife

2.51 The 1974 publication of Endangered Fauna (34) indicates no rare, threatened or endangered species are known within the project area.

3. RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS

3.01 In 1965, Monroe, Lucas and Wood Counties, their local municipalities, U.S. Bureau of Public Roads, and the Highway Departments of Michigan and Ohio organized to define a Toledo Regional Area and to formulate comprehensive plans for land use and community development. Preparation of the plans was assigned to the Lucas County Planning Commission.

3.02 Located on the west bank of the Maumee River are a few industries, the Toledo sewage treatment plant, Riverside Park, two yacht clubs, a marina and the Coast Guard Station. The east bank is developed intensively by industries related to the Port of Toledo transshipment activities. A large steel manufacturing company and a Toledo Edison power plant are also located on the east bank. At the mouth of the river, offshore is the confined disposal area built from dredge material.

3.03 The Maumee River Basin has been the subject for many studies and surveys. In March of 1974, a survey report on flood control of "Maumee River Basin, Indiana and Ohio" was released by the Corps of Engineers. A study is currently being conducted by the Great Lakes Basin Commission to develop a comprehensive framework plan for water resources in the Great Lakes Basin and a combined effort from several agencies. The Commission is also sponsoring the "Maumee River Basin Level B Study" to develop an action program to satisfy the water and related land resource needs and desires for up to 25 years.

3.04 The Toledo-Lucas County Port Authority established a 10-man environmental advisory committee to conduct a 5-year study. The purpose of the study is to determine what effects a diked disposal facility for containment of the polluted materials dredged from the Maumee River and its inner bay will have on the ecological balance of Maumee Bay. Of particular interest will be the areas of fish, waterfowl, benthos, water quality, currents, soil erosion and thermal pollution. The 390-acre confined disposal facility, is a joint development of the Port Authority and the Corps of Engineers.

3.05 The new confined disposal facility located 355 feet Southeast of the Toledo Harbor navigation channel between mile points one and two in Maumee Bay is adjacent to the existing Toledo Edison diked disposal area and the proposed Toledo-Lucas County Port Authority dike fill area. The property is owned by the Toledo-Lucas County Port Authority who proposes to incorporate the disposal area into an expanded industrial park and port facility upon completion, thereby expanding the capacity of the port to handle waterborne commerce. The island disposal facility will be turned over to local government for development, presumably for recreational activities.

4. PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT

4.01 Maintenance dredging of the channels to the authorized depths is a basic activity and responsibility of the Corps. This requires the removal of large quantities of sediment that must be disposed of economically but with the least possible adverse environmental impact. The impact of the proposed project on the environment can be discussed in terms of beneficial impacts, proposed dredging impacts, and proposed disposal impacts. No rare, threatened or endangered species are found within the area. No designated properties, historic, cultural, or archeological sites have been identified or are known to exist within the project area.

A. Beneficial Impacts

4.02 Annual dredging of the harbor and lake channels to the authorized depths will allow continuation of safe navigation for deep draft ves-

sels throughout the harbor. The port supports a large labor force, associated transportation enterprises, and provides taxes to the community. Table M lists the monetary value of commodities providing an insight as to the importance of the harbor for waterborne commerce. The monetary value to the port is a factor in the economic well-being of the surrounding region.

4.03 Industries utilizing the port derive benefits from the use of waterborne commerce since it provides less unit costs than other modes of transportation. Continued availability and possible expansion (especially from development of the new confined disposal facility) of the existing port facilities should present viable economic amenities to the industries and commerce of the Toledo area. The presence of prosperous and stable industries utilizing the port influences a corresponding economic stability to the community.

B. Proposed Dredging

4.04 During the past 10 years, maintenance dredging of Toledo Harbor has been performed with a total of about 15,513,000 cubic yards of material removed, an average of nearly 1,551,000 cubic yards per year. The material is removed from the navigation channel that is about 25 miles in length; extending from the deep water in Lake Erie to a point on the Maumee River, about 7 miles upstream of the mouth.

4.05 Dredging for CY 1976 is scheduled for approximately 111 days by the hopper dredges MARKHAM (23 June to 29 July and 1 October to 13 December), 35 days by the HOFFMAN (24 June to 28 July), and about 28 days by the HAINS. This is a tentative schedule and is subject to change.

4.06 Physical alteration of the sediment-water interface in the dredging area will have several immediate impacts: bottom dwelling organisms will be either decimated or displaced; sediments will be resuspended resulting in a reduction of transparency; toxic metals and nutrients of polluted sediments may be released into the environment; organic material will be reintroduced and will oxidize, reducing the oxygen level.

4.07 Removal of the polluted sediments from the harbor channels and deposition into diked disposal sites will reduce the possibility of the sediments being discharged into Maumee Bay and Lake Erie during periods of increased flow and velocity of the Maumee River. There may be improvement of the quality of harbor bottom-habitat in the polluted areas by removal of the sediments. Until an effective soil management program is initiated that would restrict sediment runoff, dredging will be necessary for harbor utilization.

4.08 Removal of the existing bottom habitats for fish and benthic macro-invertebrate communities will result from dredging. Recolonization of these areas would generally be dependent on the species' nature and mobility of organisms inhabiting the affected areas and the subsequent type of substrate (26).

TABLE M

TOLEDO HARBOR MONETARY COMMERCE BENEFITS

Commodity	1972[a] Tonnage	1972[a] Value/Ton	1972[a] Port Value	1973 Tonnage	72:73 Ratio[b]	1973[c] Value/Ton	1973 Port Value
Coal	14,997,657	$ 3.27	$49,042,338	14,514,434	1.13	$ 3.69	$53,558,261
Iron Ore	5,403,509	3.80	20,533,334	6,477,401	1.06	4.02	26,039,152
Grain	2,671,529	7.64	20,410,481	1,555,746	1.79	13.67	21,267,047
General Cargo	801,174	19.98	16,007,456	1,003,079	1.06	21.17	21,235,182
Petroleum Products	769,080	4.74	3,645,439	671,058	2.22	10.52	7,059,530
Clay, Stone, Cement, Sand & Gravel	417,703	1.46	609,846	367,456	1.03	1.50	551,184
Miscellaneous Bulk	187,898	4.74	890,636	332,579	1.07	5.07	1,686,175
Total	25,248,550		$111,139,530	24,921,753			$131,396,531

(a) FEIS Confined Disposal Facility for Toledo Harbor, Ohio, Feb. 1974
(b) Ratio from Wholesale Price Index
(c) Calculated Value/Ton Utilizing NCD Ratio

4.09 The nonmobile species and the temporarily displaced mobile organisms that inhabit the dredging areas will be destroyed. Plant and animal life dependent upon this area will also be destroyed.

4.10 During dredging operations, the nutrients are reintroduced into solution or suspension from anaerobic sediments (29). These additional nutrients would be available for aquatic plant growth until oxidation of the reduced nutrient forms occurred, thus removing the nutrients by natural chelation or incorporation into organic matter. The amount of phosphorus possibly released from the sediments would be insignificant compared to the estimated 90 metric tons of soluble phosphate contributed to western Lake Erie by the Maumee River (30).

4.11 Reintroduction of micro-toxic heavy metals (Ca, Fe) from sediments is being studied for the Waterway Experiment Station by the University of Southern California. The amount released into solution has been reported as insignificant to be harmful to aquatic life. Preliminary data involving reintroduction of macro-toxic heavy metals (Zn, Hg) is inconclusive.

4.12 A negative impact of concern is the turbidity attributed to the overflow from the hopper bins and the sediments stirred up from the operation of the cutterheads. This problem is more acute in the Toledo Harbor due to the silt composition of the sediments and the low settling characteristics of the material (Table N). It required 41.5 hours to settle 90 percent of the sediments (15). An odor problem is associated with disposal operations. A steady pumping noise is audible about 2,000 feet away (17).

4.13 Turbidity in the Bay Area is also a natural phenomenon. Winds stir the lake during stormy weather and rains carry sediments lakeward from tributaries. Turbidity caused by dredging is related to the amount of work done and weather conditions. Water color can temporarily change during operations, creating an adverse aesthetic effect.

4.14 Increased turbidity tends to restrict light penetration that is necessary for photosynthesis for organisms and for aquatic flora. Resuspended organics tend to reduce the oxygen levels from 16 to 83 percent, due to high initial oxygen demand (6). Correspondingly, increases in solids, chemical (COD) and biochemical (BOD) demand, total phosphorus, metals and possibly grease and oil would be expected to occur in the immediate dredge area.

4.15 Table N contains a comparison of the average values for parameters analyzed on sediment samples collected from the 1967 Lake Survey Study (14). The organic content, as indicated by the volatile solids content, is about 8% and is similar to western Lake Erie. Oil and grease is generally low averaging 0.148% and also not significantly different from the lake bottom in western Lake Erie. The biochemical oxygen demand of the river sediment increased downstream from the turning basin without an apparent relation to dredging.

TABLE N

COMPARISON OF AVERAGE MAUMEE RIVER SEDIMENTS AT DREDGING AND DISPOSAL SITES[a]

Parameter	Dredging Site	Diked[b] Disposal Site	Lake Disposal Site Before	Lake Disposal Site During
% Volatile Solids	8.3	9.1	7.9	8.1
% Total Solids	45.2	45.4	30.6	39.7
% Oil & Grease	0.148	0.15	0.06	0.16
BOD (mg/g)	1.5	0.8	-	0.8
Settleability (% 1st hr)	7.7	-	6.8	7.7
Settleability (hrs. for 90%)	41.5	-	43.7	43.5
pH	6.8	7.2	6.7	7.7
Eh (volts)	-0.09	-0.08	-0.08	-0.08

[a]Lake Survey 1967 data, Appendix A27, Table 2 and pgs. 14-17, all values are averages.

[b]Bay area north of diked area.

4.16 In an attempt to evaluate effects of dredging and disposal on Lake Erie a comparison was made between that project in the Toledo area and the estimated discharge from the Maumee River during the same 51 day period (Table O). The estimate for dredged material was obtained by determining the average fluid content of dredged material, estimating difference between source and background concentrations, then calculating weight of each constituent. Volume in river discharge was estimated by subtracting suspended sediment load from flow volume and applying average concentration of a particular parameter in the river. This striking comparison is not made to justify any type of disposal but rather is intended as an aid in evaluating the economic feasibility of alternative methods of spoil disposal.

TABLE O

RIVER SEDIMENT DISCHARGE VERSUS DREDGING SEDIMENT DISCHARGE[(15)]

Parameter	Contribution to Lake (lbs.) by River	by Dredge	Dredge/River
Chloride	54,023,500	3,500	.0065%
Phosphate	3,608,000	200	.0061%
Nitrate	22,610,000	1,300	.0056%
Sulfate	177,513,600	15,100	.0085%
Calcium	54,841,300	4,900	.0089%
Magnesium	27,661,200	1,500	.0053%
Sodium	65,905,800	2,500	.0037%
Potassium	7,456,500	700	.0088%
Silica	6,734,900	400	.0061%
Total	420,354,800	30,100	.0072%

4.17 Generally, concentrations of ions in solution was high in the river during the study and these values fluctuated with volume and direction of flow. The extent of flow and river composition tended to conceal the dredging effect. It is recognized that turbidity is one parameter that should be prominent in the dredging area. The State of Ohio conducted studies that showed an increase of turbidity within a 200 foot radius of an active dredge, although this increase is temporary. Water quality analysis conducted by the State of Ohio and the Toledo Pollution Control Agency in areas adjacent to active dredges show a slight decrease in dissolved oxygen levels, water temperature and pH; soluble phosphates show a decrease; and conductivity and chlorides show no increase. The natural high turbidity of the Maumee River makes it difficult to determine the effect of dredging operations on transparency. There was little evidence of dredging effects on the adjacent stations in the river.

4.18 A potential temporary hazard to small boaters and deep draft shipping will exist during the dredging operations because of this additional traffic in the channel.

C. Proposed Disposal

4.19 Effects at a disposal site depend upon the nature of the dredged sediments and, in the case of diked disposal, on the effectiveness of the containment area. At Toledo, the previously used island diked disposal area is a 3,800 foot by 1,600 foot inclosure on the north side of the channel about one mile from the mouth of the Maumee River. Excess water was released into Maumee Bay through a pipe in a weir at the northeast corner of the inclosure (Figure 4). The effectiveness of the diked area at Toledo was best measured by comparing the quality of the overflow through this pipe with the quality of the dredged material introduced into the diked area. Table P shows various concentrations of suspended sediments determined at the diked disposal site in 1967. Outlet facilities at the new 242-acre confined disposal site (Figure 5) consist of a weir with an oil skimmer at the northeast corner of the diked area.

4.20 Shown in Table P, remedial changes, including raising of the island disposal facility's weir, were made (1967) to improve the overflow of suspended sediments. Greater settling of the suspended matter was accomplished through a longer retention time and slower velocity of flow within the diked area. Bottom habitats of dredged areas may improve with the removal of the polluted materials. Disposal of the dredged material into the diked disposal areas will create odors ranging from mild (non-pungent) to noxious.

TABLE P

SUSPENDED SEDIMENT AT THE ISLAND DISPOSAL AREA AT TOLEDO[a]

1967 Date of Sampling	Suspended Sediment	
	Overflow	700 Feet N. of Overflow
9/26	986.6	248.6
9/27	4374.8	63.6
9/29	6564.8	59.2
10/4	12619.8	74.0
11/15	3197.6	--
11/15	119.6	--
11/16	25.2	59.6
11/16	72.0	30.2
11/17	37.6	--

[a]Lake Survey 1967 data, Appendix A27, Table 6, all values in mg/l.

4.21 A very limited sampling and testing program was conducted (12) on the water from the weir overflow at the Island Site. The total volatile solids, total suspended solids, acidity, and concentrations of phosphates, calcium, copper, potassium, and sodium were higher in the river water than in the water from the outflow weir of the disposal site. Chemical oxygen demand, total iron, and silica were higher in the water from the overflow weir than in the river water.

4.22 Both warm and cold blooded animals inhabit the island diked disposal area. Yearly disposal of dredge spoils covers existing vegetation except on the dike. Birds are capable of flight and can relocate, before and during disposal. Dredging operations normally begin before nesting commences and dredging continues throughout selected summer periods. Mammals (rabbits, rats, mice) move onto the higher diked structure during the disposal operations, exceeding the carrying capacity of the land. Corps personnel have verified, through personal observation and inspection, the yearly recolonization of plants and animals on the island disposal site. Similar activities are anticipated at the new confined disposal facility.

4.23 Diked disposal of polluted sediments is a remedial and protective measure for the water quality of Maumee Bay. This removes a portion of the material being deposited in the channels and hindering navigation, and protects the water from further degradation. A continuous problem of enrichment by nutrients, deficiencies in dissolved oxygen, and high bacteria counts may be alleviated by removal of the source.

4.24 Disposal of the previously classified unpolluted channel sections into open water has been terminated due to the recent EPA reclassification. No harmful effects to water quality were identified from open-lake disposal, although temporary turbid conditions occurred at the site. Suspended solids reduce light penetration and, if sufficient light loss occurs, can adversely affect the life cycle of certain organisms. Upon termination of the dredging activities, the surviving organisms will begin to recolonize.

4.25 All organisms that burrow through the mud, attach themselves to solid surfaces, or crawl on the bottom are part of the benthic community. The density and species depend upon the bottom type (sand, gravel, silt, etc.), amount of organic food source, water depth, and degree of organic enrichment. The dredged material is similar in composition and grain size to the area it is deposited over, so the area can be repopulated from adjacent populations. According to experts from the U.S. Fish and Wildlife Service, recolonization can occur quickly at the dredged areas. Although benthic organisms will recolonize, the species diversity could be reduced. Due to the annual dredging and disposal, the species composition may never reach a true balance, and maximum sustained population density may never be achieved.

4.26 The biology and ecology of an aquatic system is very complex. Researchers generally agree that undisturbed aquatic areas contain large numbers of taxonomic groups with few individuals in each. Conversely, disturbed areas may contain thousands of individuals usually represented by very few species. This is the case with Maumee Bay. Oligochaetes comprised between 80-99 percent of the benthic fauna and 1-17 percent were midges. Changes in water quality will be difficult to evaluate since the benthic fauna is comprised of so few taxa.

4.27 The aesthetic impacts of the disposal sites have not been significant. The nearest residential area is separated from the island disposal area by 1/2 mile of water. From this viewpoint the area looks like a distant island. There have been complaints that the diked area blocks some residents view of ships passing in and out of the Toledo Harbor. The existence of the island disposal facility has raised other concerns in the minds of residents along the Point Place shoreline, but these by and large are not concerned with aesthetics. The new confined disposal facility is about 3000 feet from the nearest residential area.

5. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

5.01 Despite all efforts to eliminate or reduce any adverse effects from maintenance dredging operations, certain adverse effects cannot be

avoided. In the dredging area rooted aquatic vegetation and benthic organisms will be destroyed, removed, or suffer habitat changes in which they may not survive. As a result of annual dredging, the species diversity may be reduced, and the species composition may never reach a true balance. Due to the dredging operations, it is anticipated that there will be some temporary minor interference to shipping or small craft because of the presence and operation of the dredge. Temporary turbid conditions occur at the dredging areas, due to the operation of the drags and the hopper overflow.

5.02 During this short period of time, the turbid conditions in the water column will result in a decline in the water quality. This is indicated by reduced transparencies, slightly lowered dissolved oxygen levels, and increased concentrations of nutrients and solids. Fish species tend to avoid the dredging area until operations cease.

5.03 Due to the poor condition of the water in the river and at the mouth (Table D), the net effect of dredging will be insignificant, especially since the adverse conditions are short-termed. Studies conducted in 1967 by the U.S. Lake Survey and in 1973 by the Ohio District Office of EPA (Table D) show some parameters over the Ohio EPA Water Quality Standards (Appendix A). The dissolved oxygen levels should not be less than 4 mg/l at any time, dissolved solids should not exceed 750 mg/l at any one time, and nitrate nitrogen should not surpass 8 mg/l.

5.04 Generally, maintenance dredging operations cause annual periodic, short-term, localized problems attributed to turbidity, suspended solids and sedimentation. During dredging, nutrients and heavy metals will be released from the sediments where they have been in a stable, non-reactive status. Water quality and nektonic, planktonic, and benthic habitats will also be adversely affected. The benthic organisms can recolonize after dredging ceases.

5.05 Due to the amount of activity associated with the recreational and commercial navigation in the Toledo Harbor, some temporary periodic interference is likely to occur. The presence and operation of the dredging equipment may possibly result in a brief delay in the operation of small craft and deep draft shipping. The employment of the hopper dredge minimizes such disruptions to navigation.

6. ALTERNATIVES TO THE PROPOSED ACTION

6.01 The proposed action involves continued maintenance dredging of the Toledo Harbor, Ohio Federal Navigation Channels by the U.S. Army Corps of Engineers as authorized by Congress. This involves the annual removal of the sediments and disposal of the polluted materials into the diked disposal areas.

6.02 Alternatives to the proposed action can be separated as dredging alternatives or disposal alternatives.

A. Dredging Alternatives

6.03 Four (4) alternatives can be considered under this category: 1) alternative dredge types, 2) discontinue maintenance dredging, 3) dredge to a lesser depth, and 4) sedimentation and wastewater management.

Alternative Dredge Types[1]

6.04 The type of dredging equipment and the method used to accomplish the most economical and efficient dredging depends upon the composition of the material to be dredged, dredging depth, transportation distance from the dredging area to the disposal location, dredge availability, and the capability of the dredge to minimize any pollution during the operations.

6.05 Dredging equipment is classified as either mechanical or hydraulic. Hydraulic dredges operate on the suction pump principle. Types of hydraulic dredges are plain suction, pipeline-cutterhead, and hopper. Mechnical dredges accomplish the digging of bottom sediments through the direct application of mechanical force to dislodge and remove the material. Various types of mechanical dredges are backhoe, dipper, dragline, ladder, and grab.

6.06 A hopper dredge is the type selected for maintenance of the Toledo Harbor navigation channels. There are many advantages to utilization of a hopper dredge: it has excellent maneuverability; a wide range of dredging depths; and can dredge or dump while underway. Some of the other advantages of a hopper dredge are: it is efficient in removing thin layers of sediments covering extensive areas; it is a self-propelled and self-contained dredging plant; it generally does not interfere with or obstruct navigation during operations; and since dredging is accomplished by successive shallow cuts, a usable channel improvement is immediately realized as work continues. This method is also less conducive to residual shoaling than other methods of dredging.

6.07 The disadvantates of hopper dredges are summarized as follows: water turbidity is temporarily increased due to the disturbance caused by the drag and the overflow from the hopper bins; the dredge must dock in order to accomplish the pumpout operations, which is a loss of valuable dredging time; and the type of materials dredged is limited to unconsolidated silts, sands, organic matter, and loose objects that can pass through the dragheads.

6.08 Strict cost comparison of different dredge removal operations can be misleading. Each type is best suited for a particular job. Location

and amount of work, sediment type and disposal method affect costs, so this information must be taken into consideration prior to decision-making.

6.09 Based on the status of controlling project dimensions and the requirements of the equipment available, the most efficient and economical dredge type for this maintenance was the hopper dredge. Table Q summarizes the alternative types; therefore, these others warranted no further consideration.

Discontinue Maintenance Dredging[2]

6.10 This alternative would jeopardize commercial shipping and would eventually hamper other navigational activities. The primary nature of the shoaling in the Bay Channel is encroachment from the channel edges which reduces the available deep-draft width. The shoaling in the River channel is generally over full width of the channel with increased shoaling at channel turns and turning basins. The shoaling to be expected between the times of annual scheduled dredging will be about 2' to 4' at the channel edges and extending to over about 40 percent of the project width throughout the river channel; a shoaling of 1.5' along the channel center line about 3,500' long located immediately upstream from river mouth, and shoaling in the Bay Channel of about 1' to 5' along the channel limits restricting the channel at full depth of 300' center width for approximately 30,000' lakeward of the river mouth. Within two years, accumulated sediments would reduce port utilization. Consequently, individuals and enterprises dependent on this mode of transportation for their livelihood would suffer economically. The discontinuance of dredging will not affect the pollution loading of the harbor area. Only a reduction of contaminant impact from farms, industries and municipalities will improve sediment quality.

6.11 A cost comparison between overland and waterborne shipment of commodities from Toledo, Ohio, to Monroe, Michigan, the nearest deep-water port is difficult to make. Navigation channels at Monroe and Toledo are 21 feet and 27 feet deep respectively and therefore frequented by vessels of different drafts. Cost of shipment varies with commodity (see Table R for commodity rail rates). A study is currently under way by the Corps to compare transportation costs for water and overload movement of goods between various origin and destination points of the Great Lakes Region.

Dredging to a Lesser Depth[3]

6.12 This alternative would have a similar effect to the above project proposal. Shoaling reduces efficient shipping. Each inch of undredged shoaling reduces the capacity of the average "laker" by about 100 tons (7).

TABLE Q

EVALUATION OF ALTERNATIVE DREDGE TYPES

Mechanical	Advantages	Disadvantages
Backhoe	Penetrates bottom independent of bucket-weight Short operating cycle Flexible General availability of spare parts	Limited dredging depth Limited bucket size Rough channel edges left Limited backwards dredging direction
Dipper	Equipped with power-operated dipper stick that can maneuver the bucket forward, vertical & horizontal Useful for new work and breaking up compacted material	Leaves rough channel bottom left Excessive time required for clay removal
Dragline	Special bucket is placed, via long boom, into area to be dredged	Limited dredging depth Much material lost during excavation Uneven channel bed left
Ladder	Dredges while being moved via anchor lines	Low efficiency Lacks stability when in tow Poor mobility Not designed for rough water Mooring and anchoring lines are hindrance to navigation

TABLE Q (Continued)

Mechanical	Advantages	Disadvantages
Grab	Very effective around docks, piers, and especially in corners of cuts Limited to working in silts and stiff mud Effective in removing obstructions & trash Dredging depth is practically unlimited	Not suited to stiff and hard clay Bucket weight insufficient to penetrate deep Channel left with irregular bottom
Hydraulic		
Plain Suction	Can transport over short distances Mainly for removal of free-flowing material	Simplest form Limited materials that can be handled
Pipeline-Cutterhead	Very versatile in type of material handled Usually contains own power unit	Floating discharge line from dredge to land disposal Limited dredging depth

TABLE R

RAIL SHIPMENT COST OF SELECTED COMMODITIES
FROM TOLEDO, OHIO TO MONROE, MICHIGAN

Commodity	Rail Shipment Cost Net Ton [a]	Waterborne Shipment Cost Net Ton
Coal	6.52	.48
• Iron Ore	6.20	.48
• Wheat	3.20	.62
* Industrial Machinery	22.12	Not Available
• Household Freezers	26.40	Not Available

* Rate quoted per hundredweight. Cost per ton obtained by multiplying by 20.

[a] 1975. Personal communication, Chessie Railroad System.

6.13 Decreased efficiency of transportation results in increased costs and prices throughout the industrial, commercial, and household sectors of the economy. The net effect of reductions in draft is a reduction in commerce and in the industrial activity dependent on this commerce. This alternative also has a potential large-scale effect that could deteriorate the human and natural environment. This alternative was not given further consideration.

Sedimentation and Wastewater Management[4]

6.14 Pollution abatement, storm runoff, and land management for soil erosion control could reduce the need for dredging operations significantly. Studies are underway to determine the cost of land retention of sediments, e.g., the Maumee River Basin Comprehensive Study. But practically speaking, an action program based on its findings and recommendations is many years away. Many governmental units are involved currently with watershed erosion control. Some are the U.S. Army Waterways Experiment Station, U.S. Geological Survey, State Conservation Agencies, Soil Conservation Districts, Co-operative Extention Agents and land planning units of the Universities. Their ongoing programs have reduced soil losses to a large degree but have not yet provided the total protection as indicated by the large bed load still carried by the Maumee River.

6.15 Both Federal and State laws require improvements in the wastewater treatment facilities, which would reduce concentrations of BOD, COD, total solids, nitrogen, phosphorus, and heavy metals. Since technology for mass treatment of polluted sediments is not yet available, and stormwater and wastewater treatment facilities are beyond the Corps' maintenance authority, this alternative was not considered further.

B. Disposal Alternatives

6.16 Four (4) alternatives are discussed as possible alternatives for disposal: 1) all material disposed in open water; 2) deep (over 100 feet) water disposal; 3) land disposal; and 4) pretreatment of material.

6.17 In terms of economics, practicality, irretrievable resources, and minimal ecological disruption, the process of confined dike disposal for polluted sediments offers the best solution at the present time.

All Open Water(1)

6.18 Open water disposal of polluted sediment has been considered undesirable from an ecological perspective. Introducing sediments to an open body of water increases the amount of suspended solids, increases turbidity, and possibly results in a release of organic and toxic substances. The Environmental Protection Agency has stated that polluted sediment is unsuitable for open lake disposal. The Corps operates under Regulation CFR 209.145(b)(1) governing open water disposal of polluted sediments.

6.19 As directed by the guidelines of the aforementioned Code of Federal Regulations and because of the potential adverse environmental impacts associated with this procedure, this alternative was no longer considered feasible.

Deep Water Disposal(2)

6.20 The alternative of discharging sediments to open water areas 100 feet deep has been suggested to diminish disruption of the ecological system. To reach waters of this depth would involve a trip of over 150 miles one way from Toledo Harbor. The greatly increased costs (10x or more) to accomplish this type of operation are not substantiated by any perceived benefits. This procedure is also contrary with the Code of Federal Regulations and potentially environmentally adverse, so this alternative was given no further consideration.

Land Disposal(3)

6.21 Land disposal requires an inland discharge area and pipeline or other means of conveyance. Inland disposal sites are relatively scarce, normally privately owned and being used for solid waste disposal. It is a Corps policy to secure the maximum practicable benefits through the utilization of materials dredged from authorized navigation channels and harbors, provided extra cost to the Government is not incurred. Access to disposal pumpout facilities would normally require a new channel and turn-around area for the hopper dredges. Utilization of marsh areas for sediment disposal is ecologically unwise and the

process of long distance piping has economical, engineering, and logistical drawbacks.

Pretreatment[4]

6.22 Treatment of dredge material can be accomplished in many ways: (1) local sewage treatment works; (2) separate onshore treatment plant; and (3) on-board treatment prior to in-lake discharge.

6.23 A small hopper dredge removes about 5,000 cubic yards per day of material. A 0.5 percent slurry of the amount would be a volume equivalent to the wastewater discharge of 1.2 million people (14). Existing sewage treatment plants do not have the capacity to treat these additional volumes. Costs for new treatment plants are prohibitive and chemical treatment to settle the suspended solids is expensive. In addition, chemical floculation in conjunction with open lake disposal could cover lake bottoms with sediments completely unsuitable for biological production.

6.24 In order to utilize separate onshore treatment plants, storing, handling, and transporting problems must be addressed and evaluated. These additional steps would increase the costs immediately by as much as an estimated 10 percent. Studies (14) have shown the most efficient and effective system to be a multi-hearth incineration process provided the larger particles can be removed and then the slurry thickened to 45 percent solids as it is fed into the incinerator. Costs would increase rapidly with reduction in the percentage of solids. Estimated cost of using this process for disposal of 1.2 million cubic yards of dredge spoil is approximately $2.50/cubic yard versus a cost of $0.71/cubic yard for dredging-disposal operations incurred during 1975.

6.25 On-board chemical treatment is technically feasible but is economically unrealistic when considering the volume that must be removed. Space requirements for complete treatment equipment and the large costs involved to refit the dredge plants removed this alternative from further consideration.

7. RELATIONSHIP BETWEEN SHORT-TERM USE OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

7.01 In order to evaluate the environmental relationships that can be expected to occur as a result of implementing operation and maintenance activities in the Toledo Harbor, the following definitions have been applied:

a. "Local short-term uses" are defined as operation and maintenance activities within the harbor environment and the impacts of these activities.

b. "Man's environment" includes the physical, biological, economic, and social components influencing the human community.

c. "Maintenance and enhancement of long-term productivity" is defined as the promotion of future activities of conditions beneficial to the natural and human environments expected to occur within the effective lifetime of the existing navigation channels in Toledo Harbor.

7.02 Continued annual maintenance of the authorized Federal navigation channels permits the efficient utilization of the Toledo Harbor by commercial cargo vessels. The economic benefits derived from the Toledo port activities will not be curtailed because ships cannot enter the port or must sail with lightened loads. Such benefits are considerable. A 1968 study by the Toledo Port Authority estimated some 2,000 persons were employed directly in waterborne activities and over 10,000 benefit indirectly from harbor associated activities. Cargo values at the time were estimated to be in the range of 95-115 million dollars.

7.03 Decreases in lake sediment contamination should result from dredging. Containment of the polluted materials relieves potential adverse effects on water quality and should help upgrade the Maumee Bay and Toledo Harbor for future generations. This premise is based on upland sedimentation control and improved water quality discharges from industries, municipalities and farms.

7.04 If sedimentation is not controlled, the maintenance operation will encroach upon the waters of Maumee Bay due to the need for dredge material disposal. Some 400 acres of lake bottom have been changed in this manner since 1961. Of course, these artificial islands can serve a positive use as wildlife habitat, recreational areas, or developments such as the plan by the Toledo-Lucas County Port Authority to eventually use the new disposal facility for port expansion.

7.05 Benthic habitat that will be removed by dredging will prevent the re-establishment of a completely diversified community of benthic invertebrates. As materials settle following maintenance activities, a low-magnitude siltation of aquatic habitat will occur in the channel and harbor environs. The aquatic exosystem within the area will be disrupted on a long-term basis due to the periodic disturbance or destruction of the benthic habitat.

7.06 Human productivity with the Toledo Harbor area will benefit from continued maintenance and subsequent use of the river. The navigation channels will continue to provide economic opportunities to operators and employees of the marine terminals and public revenues to city, county, state, and national government through taxes and licenses related to the river and harbor activities.

8. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

8.01 The labor, material and fuel committed for the maintenance dredging operations for Toledo Harbor are not retrievable and may be considered as commitments of resources for present and future generations. Maintenance normally requires approximately 200 dredging days in a calendar year.

8.02 Benthic organisms will be eliminated from the dredging area through sediment disruption but should not significantly impact the total bay biology. Temporary reversible disruptions to the aquatic ecosystem will occur during dredging operations, mainly from increases in turbidity and release of contaminants from the sediment.

8.03 Disposal of the polluted material into the diked island is considered an irreversible and irretrievable use. Drying and aerobic breakdown of organic matter will permanently alter this material. The disposal sediments are not in short supply and represent no major natural resources in their present form. Development of the diked disposal area would create a positive use of an irreversible action.

8.04 The new offshore diked disposal area with its estimated 10 year fill capacity removes from production 242 acres of submerged lands and a resultant volume of displaced water in addition to the 150 acrea previously committed to the Toledo island disposal site. The need for other disposal sites in the Toledo Harbor area beyond the ten year period is highly probable.

8.05 Discharge of polluted sediments to diked disposal areas involve possible contamination of the island. Certain plants are capable of concentrating some heavy metals in their tissues in amounts greatly exceeding ambient levels. These concentrations may move up the food chain and ultimately affect man if he ingests contaminated food.

9. COORDINATION AND COMMENT AND RESPONSE

A. Public Participation

9.01 In prior years no public meetings, hearings, or workshops were held concerning maintenance dredging and disposal operations. This was based on the fact that the harbors and navigation channels were established as the result of Congressional legislation and the maintenance thereof was inherent in the Federal jurisdiction over navigable waterways.

9.02 The current practice is to issue a Public Notice of the intent to perform maintenance dredging in the specified Federal Navigation Channels and/or Harbors. This maintenance work is reviewed under the following laws: Federal Water Pollution Control Act of 1972, the National Environmental Policy Act of 1969, the Fish and Wildlife Act of 1956, the Fish and Wildlife Coordination Act of 1958, the Marine Protection Research and Sanctuaries Act of 1972, the National Historic Preservation Act of 1966, the Endangered Species Act of 1973, as well as the various Congressional Acts authorizing construction and maintenance of the Federal project.

9.03 Any person who has an interest which may be affected by the disposal of this dredged material may request a public hearing. The request must be submitted in writing to the District Engineer within thirty (30) days of the date of this notice and must clearly set forth the interest which may be affected and the manner in which the interest may be affected by this activity.

9.04 A Public Notice describing the proposed maintenance dredging of Toledo Harbor was issued 8 August 1974. Comments to the Public Notice were received only from the U. S. Environmental Protection Agency (EPA). That agency expressed concern over mitigation measures for the project's potential water quality effects, particularly with respect to suspended solids, turbidity, sediment disposal, and erosion control. The District Engineer determined it was in the overall public interest to continue dredging while an EIS regarding maintenance dredging of the Toledo Harbor was prepared. A statement of findings to that effect was made a matter of record on 11 September 1974. Subsequently, a written determination not to hold a public hearing was filed on 19 September 1974 by the Detroit District Engineer, since there were no requests for a public hearing.

9.05 Maintenance dredging operations for the Toledo Harbor Channels were continued during 1975 under the authority of 33 CFR209.145. These dredging operations are undertaken pursuant to the Corps' Management Program for Environmental Impact Statements for projects in an operation and maintenance status. The Program was approved by the Council on Environmental Quality and noticed in the Federal Register, July 22, 1974, Vol. 39; page 22635. The Public Notice of 8 August 1974 implements this regulation.

B. Government Agencies

9.06 Comments from governmental agencies were generally uncritical of the need for maintenance dredging of Toledo Harbor. However, more complete information was requested for many sections of the Draft Environmental Statement (DEIS) including background, biology, methods and alternatives to the proposed project.

9.07 Historical, cultural or archaeological properties that would be affected by dredging are not present in the operational area. Concern was expressed by regulatory agencies (U.S. EPA; MDNR; OEPA) that resuspension of contaminants from polluted sediments would seriously affect water quality and the inhabiting aquatic organisms. Compiled benthic data showed a highly disturbed aquatic ecosystem composed primarily of pollution tolerant organisms. Corps research shows that some contaminants may be released from dredged sediments though the effects should be of a temporary nature to the present aquatic ecosystem. Additional information on the fish and fowl of the area was requested by the U.S. Department of Interior. More information has been added to the final environmental impact statement (FEIS) addressing these concerns.

C. Citizen Groups

9.08 The dredging project has been well publicized by local and regional news media. No comments on the public notice were received from concerned citizens. Citizen groups did comment on the Draft Environmental Impact Statement. The National Association of River and Harbor Contractors questioned why the DEIS did not include a section on non-Federal dredging operations in the harbor. Non-Federal dredging requires a permit under authority of the River and Harbor Act of 1899 for any dredging, excavation or fill in navigable waters. Before a permit is granted for such action, an environmental assessment is made and evaluated to determine the need for an environmental impact statement. Health Planning Association of Northwestern Ohio commented on dike upkeep following sediment deposition. Local interests would maintain the disposal site, and coordination with erosion control agencies is continuing to prevent or reduce further sedimentation problems of the harbor area.

9.09 Draft Environmental Statements were sent to many governmental and citizen groups. Comments received from responding groups are listed in the comments and response section, Appendix C.

9.10 The Draft Environmental Statement was sent to the following agencies and groups requesting their review and comments:

Advisory Council on Historic Preservation
Federal Power Commission
U.S. Department of Agriculture - Forest Service
U.S. Department of Commerce
U.S. Department of Health, Education, and Welfare
U.S. Department of the Interior
U.S. Department of the Interior - Fish and Wildlife Service
U.S. Department of Transportation - Federal Highway Administration
U.S. Department of Transportation - U.S. Coast Guard
U.S. Environmental Protection Agency
Ohio Historic Preservation Office
Ohio Historical Society

State of Ohio Environmental Protection Agency
State of Ohio - Department of Natural Resources*
State of Michigan - Department of Natural Resources
Health Planning Association of Northwest Ohio
Lake Erie Advisory Committee
National Association of River and Harbor Contractors
City of Toledo, Ohio*
Toledo Metropolitan Area Council of Governments
Toledo-Lucas County Port Authority*
Toledo Naturalists' Association
National Audobon Society*

*No response to the Draft EIS received.

Advisory Council on Historic Preservation

1. Comment:

If no National Register property is affected by the project, a section detailing this determination must appear in the environmental statement.

Response:

A section has been added to the Final EIS indicating no National Register property will be affected. Note paragraph 4.01.

2. Comment:

A statement should be made as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-Federally owned districts, sites, buildings, structures, and objects of historical, archaeological, architectural or cultural significance.

Response:

The dredging of sediments from the bottom of the Maumee River and adjoining bay will not affect any properties of historical, archaeological, architectural or cultural significance as there are no identified sites in the river or near the disposal areas. A statement to this effect is now included in the environmental statement, par. 2.49.

Federal Power Commission

1. Comment:

No comments on the Draft EIS.

U.S. Department of Agriculture, Forest Service

1. Comment:

It is not clear whether this statement is intended as a "programmatic" statement that would not be repeated annually, or whether it is meant to cover only FY 1974 dredging.

Response:

The Final EIS will be reviewed periodically to determine whether updating is necessary. It was not meant to cover FY 1974 dredging.

2. Comment:

There has not been an attempt to weigh the benefits of annual dredging against the costs. This analysis becomes particularly important in light of the steady decline in tonnage from and into the harbor.

Response:

While not presenting a benefit/cost ratio, per se, the figures clearly indicate the monetary values generated by harbor utilization. See Section 1.D.

U.S. Department of Commerce

1. Comment:

The draft environmental impact statement incompletely describes the environmental setting of the project area. The statement should discuss in detail the aquatic resources of Maumee Bay, the Maumee River, and the proposed open lake disposal site.

Response:

Information concerning the aquatic resources of the Maumee River and Bay area has been expanded in the Final EIS in Section 2.

2. Comment:

Reference page i, Section 3(B)(DEIS). Should indicate that benthic organisms will be disturbed and removed throughout the project area.

Response:

Agreed, see Section 2-I and paragraphs 4.06 and 4.08.

3. Comment:

Reference page 4, paragraph 1 (DEIS). We suggest that the proposed open lake disposal area be depicted on a map.

Response:

The location of the disposal areas is shown on Figure 3.

4. Comment:

Reference page 6, Section 2 (DEIS). Describe the open lake disposal area as well as the area in the immediate vicinity of the navigational project.

Response:

The open lake disposal area as well as the other disposal sites are described in Section 1.C. Section 2.A. has area description.

5. Comment:

A discussion of the ongoing Maumee Level B Study being conducted by the Great Lakes Basin Commission, and a discussion of the effect this study may have on future sediment loading, dredging requirements, and acceptable disposal sites should be included in this section.

Response:

The Maumee River Level B Study is incomplete and is a reconnaissance level evaluation of water and land resources. It is prepared to identify complex long-range problems through a group of frame-work studies and to recommend plans and programs to be implemented by Federal, State and local entities. When completed it will be utilized where applicable. No recommendations from this study have been officially formulated.

6. Comment:

Reference page 15, paragraph 2 (DEIS). Location of the biological activity discussed should be noted. As previously stated, a description of the biological activity in the area of the open lake disposal site should be included. Include actual biological data.

Response:

A complete description, including location of the former open lake disposal for the non-polluted materials, has been included in the Final EIS in Section 2I.

7. Comment:

Reference page 15, section 2.10 Fish (DEIS). A thorough evaluation of the project's impacts on fish is needed. Explain why a range of tonnages were presented for a single year.

Response:

Additional information concerning fish resources in Maumee Bay area has been included in the Final EIS in Section 2-K. Figures shown in DEIS were estimates furnished by the Ohio DNR. They have been deleted in FEIS.

8. Comment:

The conclusion that the removal of polluted sediments will improve bottom habitats of the dredged areas seems premature. Any improvements in the benthic habitat will depend on the substrate exposed and the rate at which polluted sediments are redeposited in the area. The apparently conflicting statements in this section and in DREDGING IMPACTS should be reconciled.

Response:

Statement clarification is in paragraphs 4.06-4.09. With implementation of land management and pollution control facilities, sediments containing fewer contaminants should be deposited in the river and lake.

9. Comment:

The area over which turbidity and siltation are to occur should be described and the impacts discussed. Any effects that siltation may have on fish spawning areas should also be determined and described.

Response:

Due to the sand, clay and silt composition of the river and bay any area dredged will have adverse impacts. Exact areas to be dredged are not determined until several weeks prior to dredging. The disposal locations are indicated in Figure 3. A discussion of fish spawning has been added in FEIS. Refer to paragraph 2.48.

10. Comment:

Any adverse effects that may result from resuspending pollutants that could interact with the chemical or thermal plumes from the Toledo Edison power plants located in the area should be discussed.

Response:

The contaminants that the dredging resuspends could possibly be transported over a wider area of lake if they interact with the thermal plumes discharged from the power plants. Temperature increases related to thermal loading of the river may cause an increased rate of dissolved oxygen depletion by resuspended nutrients or increased organic material decomposing. Of course, this is dependent upon the temperature differential between the thermal plume and ambient water temperatures.

11. Comment:

The source of the data on percent oxygen reduction resulting from resuspended organics should be cited.

Response:

This data was obtained from Reference 6.

12. Comment:

Include a discussion of the impacts associated with open lake disposal of the clean spoil (approximately 275,600 cubic yards).

Response:

Sections dealing with the effects of open lake disposal of non-polluted sediments are paragraphs 1.20 and 4.24.

13. Comment:

Although benthic organisms will recolonize the area following dredging, the species diversity could be reduced. As a result of periodic (annual) dredging, the species composition of the area may never reach a true balance, and maximum sustained population density may never be achieved.

Response:

This comment has been added in paragraph 4.25.

14. Comment:

Reference page 19, Section 6 (DEIS). The discussion of each of the alternatives and its impacts should be expanded to support the conclusive statements presented.

Response:

The alternatives have been separated into dredging and disposal alternatives and the discussion expanded in Section 6.

15. Comment:

Reference page 20, Section 7.1 (DEIS). A discussion of the short-term ecological effects should be included.

Response:

A discussion of the short-term use of the environment has been expanded in Section 7.

16. Comment:

As time progresses, it will become more difficult to find

suitable disposal sites without harming the lake or land environment. Steps should be taken to reduce sediment input. Determination is needed of sediment sources and paths of their movement. These problems should be discussed in connection with the preliminary findings of the Maumee Bay Level B Study cited below. With this information, selection must be made of most effective ways to retain sediment from reaching the harbor.

Response:

The Maumee Bay Level B Study is continuing and has not reached any conclusions. Several areas have been discussed and considered as possible solutions to erosion and sedimentation control. This study is to develop an action program to satisfy the water and related land resource needs and desires for up to 25 years. Some of the possibilities are as follows:

1) advanced waste treatment to meet water quality standards;

2) select land where drainage patterns, topography and soils are favorable for the intended use;

3) fit the development into the site and provide erosion control measures;

4) develop large tracts in small workable units so large areas are not left exposed for long periods of time;

5) minimize grading and removal of trees and other vegetation;

6) protect critical areas during construction with mulch or temporary cover;

7) construct sediment basins to contain runoff and trap sediment;

8) establish permanent vegetation;

9) alter crop pattern;

10) change tillage systems;

11) apply conservation practices;

12) provide adequate tile drainage;

13) remove stream obstructions;

14) reshape the streambank;

15) install riprap or other protective lining; and

16) remove undesirable vegetation.

Corrective actions are underway and have been for many years. Technical expertise on sedimentation control of upland areas may be obtained from the U.S. Geologic Survey, U.S. Forest Service, U.S. Department of Agriculture, County Extension Agents, Soil Conservation Districts, and University Agriculture and Landscape Departments.

17. Comment:

Reference to page 5, paragraph 1 (DEIS). This paragraph indicates that the project described in this draft environmental impact statement is presently underway. The conclusion could be drawn that the environmental impact statement is "after-the-fact." In order to clarify the document as to the period covered by this draft environmental impact statement, it is recommended that a Fiscal Year be indicated. In addition, consideration should be given to indicating the Corps' procedures for updating EIS's on annual dredging projects such as this.

Response:

The District Engineer determined that it was in the overall public interest to continue maintenance of the Toledo Harbor channels concurrently with the preparation of an Environmental Impact Statement. A statement of findings to that effect was made a matter of record on 11 September 1974. The EIS is to cover CY 1976 and will be reviewed periodically to determine whether updating is necessary. Guidelines governing this action were published in the Federal Register, Vol. 39, p. 22635, July 22, 1974.

18. Comment:

Reference to the alternatives, section 6 (DEIS). It is recommended that a fifth alternative, source control of sediment, be evaluated. The information obtained from the recommendations concerning sediment set forth above would provide a base for this evaluation.

Response:

We felt that 6.14, Sedimentation and Wastewater Management made sufficient reference to land retention of sediments. The solutions presented in the study are not unique; their effectiveness still depends on the implementation of a successful action program.

U. S. Department of Health, Education, and Welfare

1. Comment:

This project will not impact to any significant degree on the health, education or welfare of the population.

U. S. Department of the Interior - letter of 13 February 1975

1. Comment:

The section "Environmental Setting Without the Project" should be expanded to include more information on fish and wildlife in the project area.

Response:

Additional information has been added to the Final EIS in Section 2 concerning fish and wildlife resources in the project area.

2. Comment:

Because of the known high waterfowl value of the bay, we believe a more complete discussion of the waterfowl found in the bay is necessary.

Response:

Section 2-J on waterfowl has been re-written and expanded.

3. Comment:

Additional information, including more quantified data, would enhance the discussion of fish. This information should include locations of spawning areas, fish migrations, spawning runs and the value of the project area as a fish feeding and nursery area.

Response:

The section on fish has been revised in the Final EIS in the Section K of the Environmental Setting Without the Project. Information concerning fish habitat in the Maumee Bay area is not well documented. There are several ongoing studies addressing these deficiencies and more positive information should be available two-three years from now.

4. Comment:

In the draft, the statement in the last paragraph on page 16 relating that bottom habitats will be improved by the dredging, is somewhat misleading. This dissertion possibly could be true if the dredging was not conducted on an annual basis.

Response:

The clarification can be found in paragraphs 4.06-4.09 in the Final EIS.

5. Comment:

The impacts associated with the present disposal area should be discussed and the planned future use of the site should be indicated.

Response:

Section 4C includes additional information on open lake disposal including impacts on benthic organisms. Future use of the present confined disposal facility is described in paragraph 3.05 to the extent known at this time and impacts associated with the formation of this island are discussed in paragraphs 4.19 through 4.22.

6. Comment:

The portion of the statement entitled "Unavoidable Adverse Environmental Effects" should include a discussion of the spoil disposal site.

Response:

Information on the sediment disposal site is included in the Final EIS in Sections 1-C and 4-C.

7. Comment:

The EIS should discuss the anticipated effects of the dredging on the use of public outdoor recreation facilities in the project area, including Maumee Bay State Park and Riverfront East Park. Also, if the dredging is expected to have significant impacts on any of these facilities, mitigative measures should be indicated.

Response:

The dredging or disposal in the Harbor area should have no effect on the usage of any nearby recreation sites.

8. Comment:

It should be stressed that the use of shoal waters and other shallow water areas as containment sites destroys the high natural biological production associated with these areas, thereby having a potentially degrading effect on the future of Lake Erie.

Response:

Agreed, certain portions of the complex aquatic system are altered. See section B of Relationship Between Short-Term Use of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity.

9. Comment:

We agree with the first sentence of the 3rd paragraph on p. 21 (DEIS) which lists the loss of a portion of Maumee Bay as irretrievable; however, we suggest that the 2nd sentence be qualified. Development of the disposal site is not a positive action with respect to fish and wildlife habitat values.

Response:

In certain cases, disposal areas may act like reefs and actually attract fish. These diked disposal areas also become nesting and resting areas for birds. Development of the diked area for recreation and boating use is a positive aspect regarding water and outdoor recreational enjoyment by man.

U. S. Department of the Interior - letter of 7 March 1975

1. Comment:

No analyses or other descriptive data appear to have been provided to support the conclusion that sediments in the outer 13 miles of the channel are unpolluted, or to support the selection of the five-mile point as a cut-off point for confined spoil disposal.

Response:

The Corps of Engineers relies upon the Environmental Protection Agency's determination of the status and pollution and non-pollution limits for each harbor. A letter from EPA (Appendix C) of February 13, 1974, verifies this information.

This letter indicated which areas of Toledo Harbor were considered polluted and non-polluted. The advice contained in that letter was never changed or altered until receipt of EPA's response to the DEIS (27 March 1975), wherein the Corps was informed that it should not be assumed that sediments beyond the 5 mile point were unpolluted because knowledge of the pollutional status of sediments in the outer bay does not exist. In order to clarify this apparent contradiction the Corps conducted

further coordination with EPA, Region V. The final determination of sampling lake bottom sediments beyond the 5 mile point are indicated in EPA letter 20 June 1975 (included in Appendix C). The Corps will not remove these materials to the open-lake disposal area if they are determined to be polluted. EPA analysis of these outer bay sediments were received 19 January 1976 indicating that "none of the sediments lakeward of the upstream limit of the federal project are suitable for open lake disposal."

2. Comment:

Sediment data on Table A did not indicate the number of samples analyzed nor their locations (DEIS).

Response:

Table F has been expanded and includes the number of samples and figure 7 illustrates the sampling stations.

3. Comment:

It is states that sediments in the channel beginning five miles from the river mouth "are similar in nature to the lake bottom materials" (p. 3 center), but no description of these materials has been found in the draft statement.

Response:

This statement has been explained in the Project Description, Section C.

4. Comment:

We believe the figure given on page 12, of the DEIS third line from the bottom, of 2,212,000 tons/year for total solids (assumed to mean suspended sediment plus dissolved solids) may be in error.

Response:

This figure was contained in the Federal Water Pollution Control Administration's 1968 summary (33). According to this report, an average of 2,212,000 tons per year of total solids (the sum of suspended and dissolved materials in a sample) enter Lake Erie from the Maumee River Basin.

5. Comment:

Table F, page 12 (DEIS), gives a range for suspended solids value of 11.8 to 547.4 mg/l. Our 23-year record indicates a range in values of 8 to 1,380 mg/l.

Response:

The data (on Table D in the Final EIS) is the result of a 5-month study during 1967, which may explain the lesser range.

U. S. Department of the Interior - Fish & Wildlife Service

1. Comment:

Cover page and page i of the DEIS: The title of this EIS should be "... in Toledo Harbor, Ohio."

Response:

This has been corrected.

2. Comment:

Refer to pages 2 and 3, Table A (DEIS): Such tables are of questionable value without means for lead, zinc, and iron; sample sizes for all parameters; and sample standard deviations or standard errors of the means.

Response:

Heavy metals data was from a mercury study of Lake Erie and this limited data is in Table G. In Table F data was from another study and did not contain raw data to determine sample standard deviations. Number of samples for each parameter has been included in Table F of the Final EIS.

3. Comment:

Refer to page 4 (DEIS): The 1,175,000 cubic yards removed annually given in paragraph 1 is 85% of that in paragraph 2. Report only the latter figure, since it is derived from Table B. (But also see page i.)

Response:

These values have been revised. See paragraph 1.21 and Table A.

4. Comment:

Page 5: (DEIS) Point (b) conflicts with the second complete paragraph on page 19.

Response:

This conflict has been clarified. Of all methods for dredging, the hopper dredge would conflict least with on-going navigation.

5. Comment:

Refer to page 8, paragraph 1, sentences, 4, 5, and 6 (DEIS): River discharge or flow is expressed in three different units -- cubic meters, cubic meters/sec, and cubic feet/sec. Adopt one of the last two.

Response:

This has been corrected so all the values are expressed as cubic feet per second (cfs) or feet per second (ft/sec).

6. Comment:

DEIS section 2.10, paragraph 1: Change sentence 1 to "Maumee Bay's principal fish species and commercial catch are shown in Table I." Delete the last sentence. Change the heading for Table I to "COMMERCIAL FISH PRODUCTION, MAUMEE BAY AREA (1971)."

Response:

Corrections have been made on Table L of the Final EIS.

7. Comment:

DEIS Page 17, top: This conflicts with the second paragraph on page 18.

Response:

This section has been expanded and the conflicting statements corrected. Refer to Section 4-B.

8. Comment:

Fish species and benthic organisms may return and recolonize, but do you expect them to be of the same (or better) quality and quantity?

Response:

See Comment No. 13, U.S. Department of Commerce.

9. Comment:

DEIS, Page 20: Subpoints 6.3 and 6.4 should be entered to correspond with (3) and (4) on page 19.

Response:

This error has been corrected.

U.S. Department of Transportation - Department of Highways

1. Comment:

We have no comments to offer regarding the proposed improvement.

U.S. Department of Transportation - Coast Guard

1. Comment:

No comments.

U.S. Environmental Protection Agency

1. Comment:

Additional information and exhibits under Project Description are required on the existing Toledo Island confined disposal facility (CDF) with regard to the composition and integrity of its dike design and average spoil elevation; location of the existing weir overflow works; the pipeline structure and pumpout mooring facility for the hoppers; the average retention time afforded prior to discharge through the weir, and the status of vegetative cover and spoil effects; and the past effects of wind and water erosion on dike structures and spoil material.

Response:

A description of the CDF has been added to the Final EIS, including the other confined sites - those on the river and the proposed confined site. See paragraphs 1.12, 1.13, 4.12, and 4.17. Storms, during periods of high water, have caused some erosion but any area that shows erosion is repaired and reinforced with riprap to deter this process.

2. Comment:

a) Since we have not classified bottom sediments in the channel from mile point 5 and beyond, it should not be assumed that these sediments are unpolluted. b) We request that the sediments from mile point 5 to the outer project limits of dredging be sampled at one mile intervals in the near future and that this information be presented to our office for review. c) U.S. EPA resampled the Toledo Harbor area last March 27, 1973. A copy of the survey report is available and should be incorporated in the EIS.

Response:

a) This is not an assumption. A letter from EPA dated February 13, 1974 (Appendix C) verifies the classification that has guided the Corps dredging operation and design/construction of additional disposal sites.
b) As a result of subsequent coordination between the Corps and EPA, a sampling survey was conducted by EPA during September 1975 on the outer bay sediments. Results were received in January 1976. All sediments have been judged as unsuitable for open water disposal. Data is included in Tables I and K.

3. Comment:

The disadvantages of utilizing a hopper dredge should also be detailed in the EIS.

Response:

The disadvantages of using a hopper dredge have been included in the discussion Description of Dredging Operations in Section 1C, The Plan.

4. Comment:

It should be mentioned that the high turbidity encountered in the hopper's overflow is caused by the displacement of a supernatant containing a fine suspension of clays, silts, inorganic and organic pollutants by more settleable and larger sediment particles. The adverse effects of resuspending these fines and pollutants into the aquatic environment should be discussed in more detail.

Response:

Additional information dealing with the resuspension of fine particles has been added to the Final EIS. Refer to Section 4-B.

5. Comment:

The EIS should indicate the average volume of overflow discharged from each hopper dredge per operation trip in this harbor to achieve the desired volume and spoil mixture for transport to the CDF.

Response:

Six test loads during the overflow period from the MARKHAM resulted in overflows ranging from 38%-88% of the load volume depending upon the dredged material composition. Large particles (sand) necessitate very little overflow while small particles (silts and clays) need increased overflow time to fill the hoppers with an economical load. Maximum load volume for the MARKHAM is approximately 2,700 cubic yards.

6. Comment:

We recommend that hopper rinse water be pumped directly to the CDF rather than discharging it to the bay.

Response:

As a matter of practice, rinse water from Corps-operated hopper dredges are discharged into the CDF.

7. Comment:

The economic and environmental costs and benefits of transporting the desired high solids spoil mixture as opposed to a less concentrated spoil mixture should be compared and thoroughly discussed.

Response:

Cycle time from dredging at the river mouth to the confined disposal site for the MARKHAM is about 1.75 hours. The average dredge load is 1,350 cubic yards (yd^3). Dredge cycle time from the navigation channel beyond 5 mile to the open water disposal site averages 1.63 hours with a dredge load of approximately 1,535 yd^3. The average daily operating expense for the MARKHAM was $10,108/day. Using the overflow values of 38-88% (Question 5, U.S. EPA), both operational costs and dredging time would increase proportionately. By comparison, it would cost between $13,950 and $19,000 to dredge what is normally dredged for $10,108.

8. Comment:

The Michigan-Ohio District Office of EPA has informed us that the statement in the Environmental Setting regarding standards is not accurate. We are aware that the State of Ohio has proposed water quality standards for Lake Erie (February 12, 1974) which would be applicable to the waters affected by the disposal area.

Response

Ohio EPA standards were not available at the time of the draft. The new standards went into effect 8 January 1975 and are incorporated in the FEIS as Appendices A and B.

9. Comment:

We request that Tables G & H be deleted from the Final EIS since this criteria for dredged spoil classification is not to be used in the objective sense.

Response:

Table G was removed and the data pertinent to the river included in Table F.

10. Comment:

A discussion is warranted in the EIS on the remaining capacity at the Toledo Island CDF for the subject project.

Response:

An expanded discussion of the Toledo Island CDF and other disposal sites have been added in Section 1-C. After 1975 disposal, only the small hopper dredges (HAINS, HOFFMAN) will be able to place a few loads in the area. During calender year 1976, disposal can be into the new confined disposal facility.

11. Comment:

The EIS indicates on page 6 of the DEIS that possibly one year of capacity remains at the Toledo Island CDF. This apparent discrepancy with the computed .139 MCY Remaining Capacity that was derived from figures presented in both the EIS and the Contract Report requires an explanation.

Response:

The Final EIS contains updated dredged totals (Table A), including the information from CY 1975. Additional capacity in the island disposal has been gained as the sediments compact and the entrapped water evaporates. During CY 1975 the dike will be reshaped to the full design cross-section and profile. The new confined facility will be in use in 1976.

12. Comment:

The DEIS should detail the past and existing effects of wave and wind erosion upon the CDF and discuss how these problems are being mitigated. Failure of dike structures should be prevented in order to preclude water quality degradation from the entry of polluted materials into Maumee Bay.

Response:

Wave action has caused portions of the outer perimeter of the CDF to erode. Riprap has been placed to protect the CDF from further erosion. See EPA C/R#1.

13. Comment:

A better description of the "temporary" (DEIS-page 18) effects should be included. We request that water quality in the area being dredged and at the CDF overflow weir be monitored before, during and after dredging operations for the parameters listed on page 18. A biological investigation of these areas should be made to correlate effects upon aquatic organisms and waterfowl from the project's impacts upon water quality.

Response:

Descriptions of the effects of the dredging operations have been elaborated upon in Sections 4 and 5. Comparison of before and after dredging conditions are indicated in Table M. An extensive monitoring program is just beginning in Maumee Bay. The Corps is presently gathering background data to check for possible effects of the new CDF. The program will check for both water and biologica impact of the project. One of the monitoring stations is located at the weir. Background information is contained in Section 4-B.

14. Comment:

The EIS should specify the period during the year when O&M activities will occur at Toledo Harbor.

Response:

The tentative schedule is included in Section 4.05. This schedule is subject to change depending on priorities, availability and condition of plant, nor is it necessarily at the same time year to year.

15. Comment:

In the Alternatives to the Proposed Action, the EIS should provide a more comprehensive discussion of alternative methods and processes for operational dredging in Toledo Harbor in addition to the disposal alternatives already discussed.

Response:

This discussion has been addressed and expanded upon in Section 6.

Ohio Historic Preservation Office

1. Comment:

We feel that the proposed project will not affect any properties,

either prehistoric or historic, which are listed on, nominated to, or eligible for the National Register of Historic Places. We note no evidence (in the DEIS) that the National Register was consulted during project planning.

Response:

Paragraph 2.49 in the Final EIS affirms the fact that consultation of the National Register of Historic Places was carried out. Your comments concerning project affect on historic properties has been placed in the Final EIS.

The Ohio Historical Society

1. Comment:

This project should not have any effect on archaeological resources.

Response:

This information has been incorporated into the Final EIS, par. 2.49.

Ohio Environmental Protection Agency

1. Comment:

Title Page (DEIS) - Toledo Harbor is in Ohio.

Response:

This error has been noted and corrected.

2. Comment:

Summary page, Section 3(A) of the DEIS - should indicate "possible reduction of fish populations" not "reduction of possible fish populations" and should have been listed under Section 3(B).

Response:

This statement has been reworded in the Summary, Section 3, to include the aquatic ecosystem.

3. Comment:

Refer to page ii (DEIS) - the proximity of the words "feasible but

impractical" is unclear. It would seem that if the alternatives were feasible (viable), they would, to some extent, be practical.

Response:

All of the alternatives are feasible but some are impractical because of time and expense involved to be accomplished.

4. Comment:

Reference page 2, Section 1.4 (DEIS). Table "A" has questionable value in the determination of sediment quality. There is a lack of updated data from the polluted and unpolluted areas to indicate current pollutional levels.

Response:

Table A has been changed to Table F and placed in Section 2H. Data from U.S. EPA's Survey in 1973 has been included. In September 1975, U.S. EPA sampled beyond the 5-mile point. Combining the data from this survey with that obtained from their 1973 survey, they concluded that none of the sediments lakeward of the upstream limit of the federal project are suitable for open lake disposal.

5. Comment:

Refer to page 4, Section 1.5 (DEIS) - There is no description or discussion of the process by which the polluted spoil will be put into the island disposal site. The process, the equipment that will be used, and the safety precautions that will be observed should be described. Also, the area and procedures for open lake dumping should be noted along with the expected times of the year and durations of dredging activity so that the lengths of any environmental impacts can be established.

Response:

The loaded dredge will dock at the pumpout facility where it will attach with a floating pipeline. The pipeline extends over the dike into the disposal facility. As the dredge discharges the sediments and accompanying water the sediments spread over the interior of the site. As the entrapped water evaporates, the suspended solids settle. The excess water then is allowed to pass back into the lake over the weir. Overfilling the disposal site is avoided to prevent the suspended solids from passing back into the waterway. Open lake dumping is discussed in the Final EIS in 1.15 and disposal areas shown on Figure 3, dredging procedures in Section 1C, The Plan, and the proposed schedule in 4.05.

6. Comment:

Refer to page 6, Section 2.1 (DEIS) - Will the present diked disposal area be filled prior to the completion of the new 242 acre site. If so, what measures will be taken for disposal of polluted spoil if any dredging will be done in the interim?

Response:

The present sites have capacities to accommodate 1975 dredgings. The 242 acre site will be completed prior to dredging in 1976.

7. Comment:

Refer to page 6, Section 2.1 (DEIS) - This section should mention the dredging area, describe the channel and outer harbor characterisitics, and note any intakes/outfalls in or near the channel as well as environmentally sensitive areas. Harbor Diked Disposal Site #3 should be displayed.

Response:

The dredging area is described in the Project Area, 1.03, 1.06. The Toledo-Lucas County Port Authority Disposal Area is displayed on Figure 3. The Final EIS, in Sections 1 and 2, intensively describes conditions in the operational area and environs. Figure 1 indicates waterfront development as well as channel definitions. Figure 3 displays the locations of all the disposal Sites.

8. Comment:

Refer to page 8, Section 2.4 (DEIS) - Please provide a reference for this section.

Response:

U.S. Department of Commerce, Bureau of Census, 1970.

9. Comment:

No analysis of the declining tonnage is given. Will continued dredging turn around the decrease in tonnage?

Response:

Lower coal shipment was the basic reason for the traffic drop. With the present oil energy shortage, it can be expected that the coal shipments will start on an upward trend. No dredging will certainly limit shipping activity.

10. Comment:

Several errors in Table F of the DEIS - temperature for conductance isn't specified; what are the turbidity units; correct the pH designation; the reduction-oxidation potential should be Eh, not eh.

Response:

These errors have been corrected in the new Tables D and F.

11. Comment:

Reference to page 14, Section 2.8 (DEIS). Give quantitative data on predominant species of phytoplankton and zooplankton. The dominant benthic invertebrate species should be documented beyond "pollution-tolerant" to establish their necessity within the food chain.

Response:

In addition to the data concerning benthic organisms that has been added in Section 2-I, the Corps is gathering background data for a 5-year study of water and biological qualities in the Maumee Bay area. (Other groups are conducting independent studies also.)

12. Comment:

Reference to page 15, Section 2.10 (DEIS). Specifics as to spawning areas and general spawning periods should be provided in this section to the extent possible. "White fish" should be "White bass," and "carp" was omitted from the first line.

Response:

The available limited data on fish spawning areas is in Section 2.48. Studies are being conducted by the U.S. Fish and Wildlife Service that will locate spawning areas and periods. Corrections for "white bass" and "carp" were accomplished - see 2.45 in Final EIS.

13. Comment:

A section should be added mentioning dominant mammal, amphibian, and reptile communities in the surrounding wetland areas. A statement concerning the effect or impact on threatened, rare and endangered species should be provided.

Response:

This information has been included in paragraph 2.50. A statement on the impact on threatened, rare, or endangered species is located in paragraph 2.51.

14. Comment:

It should be referenced if the National Register has been consulted and if any historical, archaeological or paleontological officials requested any investigations.

Response:

The Ohio State Preservation Office has been consulted. There are no known sites in the area that would be affected by maintenance dredging. A copy of the letter is enclosed in Appendix C. Note paragraph 2.49 FEIS.

15. Comment:

Refer to page 16, Section 4.1 (DEIS) - It is difficult to understand how bottom habitat or water quality will be improved because of dredging since dredging is not a "final" solution. Water quality would seem to accrue from soil management and proper wastewater control.

Response:

See Comment No. 8, U.S. Department of Commerce.

16. Comment:

Refer to page 17, Section 4.2 (DEIS) - What mitigative measures (if any) can be taken to control or reduce hopper bin overflows? Discuss the magnitude of the effect of dredging. Ohio EPA believes such effects can be determined to some extent on water quality. Give period of time necessary for water quality to return to original level after dredging operations.

Response:

The dredges could be equipped with overflow closure structures that can be installed in the entrance of the discharge pipe to limit overflow. However, this would prevent attaining an economic load (see U.S. EPA, C/R No. 7). Studies conducted by the State of Ohio in relation to commercial sand dredging in Maumee Bay showed that turbidity increases are of a temporary nature, generally noticeable within a 200 feet radius of an active dredge. Water quality tests conducted by the State of Ohio and the Toledo Pollution Control Agency indicate conductivity and chlorides show no increase at active dredges; soluble phosphates show a marked decrease adjacent to dredge effluents; and dissolved oxygen levels, water temperature, and pH show a slight decrease adjacent to active dredges. Turbidity and water quality values for estuary stations downstream from active dredges are generally consistent with those found at upstream estuary stations. (ODNR Div. of Geological Survey, 1970). Other effects are discussed in Section

5, FEIS, and paragraph 4.12 indicates that the silts disturbed in the navigation channels require almost 42 hours to settle 90% of the sediments.

17. Comment:

Reference to page 18, Section 4.3 (DEIS). The discussion of disposal impacts is rather general. Mention should be made of the open lake dumping impacts, the disposal areas and any precaution taken to prevent spilling. Will the quality of the water discharged from the diked disposal site be much different in terms of suspended solids, nutrients, and heavy metals?

Response:

Open lake disposal of dredge material causes increases of area turbidity and some benthos loss due to smothering. The settling of silty materials may cause the formation of a soft sediment substrate that is conducive to the colonization of burrowing organisms such as oligochaetes and midges. The FEIS in paragraphs 4.19 through 4.27 greatly expands the discussion of disposal impacts, both confined and open water. Paragraph 4.20 and Table P report the results of a study of the effluent and/or leachate influences from the diked disposal facility. Spilling associated with hopper dredging is normally minimal since dredged materials are transported inclosed within the vessel. Operations should be shut down if unusual spillage occurs until the deficiency is corrected.

18. Comment:

Reference to pages 18-19, Section 5 (DEIS). If possible, data should be provided to support the statement that fish species and benthic organisms recolonize after dredging ceases.

Response:

Experts of the U.S. Fish and Wildlife Service affirm that recolonization can occur quickly at both the dredged areas and disposal sites. If the dredged material is similar in composition and grain size to the area it is deposited over, then it can be repopulated from the adjacent populations. Some organisms can repopulate almost overnight.

19. Comment:

Reference to page 19, Section 6 (DEIS). Alternatives two and three should be combined, since the only way open lake dumping of all sediments can be accomplished is through treatment of at least a portion of the materials. Economic data for this alternative as well as the proposed action, should be displayed in the FEIS or Statement of Findings (SOF).

Response:

These alternatives must be handled separately. Treatment can be addressed to confined sediments as well as those open-lake dumped. As is discussed in paragraph 6.23, chemical treatment could result in unsuitable flocculations sediments that could be harmful to aquatic life. A study conducted in 1968 by the Buffalo District of the Corps of Engineers on treatment of sediments on board a hopper dredge showed how impractical this method would be. In 1968, it would have cost $0.02 per cubic yard to treat a hopper dredge loaded with polluted sediment containing 10 percent solids. The MARKHAM'S loads averaged better than 50 percent solids which would have been $0.10 per cubic yard for treatment. In 1968, 2,311,000 cubic yards of polluted sediment were removed. To treat this volume, the dredging costs would have been increased by about $231,000. In 1974, nearly 2,006,000 cubic yards of polluted sediment were removed; this would have cost about $0.18 per cubic yard for treatment for an additional cost of $361,000. These figures do not include the costs for maintenance. Economic data for the proposed action is discussed in Section 1-D, paragraphs 1.20-1.23, as well as in the SOF.

20. Comment:

Reference to page 21, Section 9. This section should be assembled as required by Appendix C, Section 4(k), "Coordination and Comment Response," of COE Federal Register, dated March 21, 1974.

Response:

Section 9 has been rewritten to comply with the Corps of Engineers guidelines, FR 21 March 1974.

21. Comment:

Mention under "Materials to be Dredged" or "Geologic and Topographic" the dominant soil types or the soil associations of the watershed.

Response:

Additional information has been added concerning soils in the FEIS in Section 2-B.

22. Comment:

Whether the intent of this EIS is to be an approval for maintenance dredging in subsequent years or is for 1975 dredging only, high quality is equally necessary, and a firm data base can be established for production of subsequent environmental statements concerning future maintenance dredging.

Response:

This EIS is for anticipated dredging during calendar year 1976 and the FEIS will be reviewed periodically to determine whether updating is necessary for subsequent maintenance operations. It should be noted that the intent of an EIS is not project approval as compared to disapproval. An EIS is a document outlining expected impacts from execution of the proposed operation in so far as such knowledge and information is available. We believe the FEIS presented here is a much improved document compared to the DEIS. It represents an honest effort to display all the data currently obtainable that would tell the story of the impacts, beneficial as well as adverse, connected with maintenance dredging of the Federal navigation channels in Maumee Bay and the lower Maumee River.

Michigan Department of Natural Resources

1. Comment:

We feel that the statement is generally lacking in data regarding the impact of the proposed dredging and disposal of polluted materials upon the aquatic environment.

Response:

The discussion of these impacts has been expanded and additional information concerning dredging and disposal effects has been added to the Final EIS, Section 4.

2. Comment:

Because the disposal sites are attractive resting places for ducks and other birds, there is a very real danger of waterfowl contacting C-type botulism. There is no discussion regarding the risk of heavy metals passing up through the food chain into waterfowl using the disposal site.

Response:

A discussion of this topic has been included in the Final EIS, Section 2.44 and 8.05.

3. Comment:

Refer to page i, item 3 (DEIS) - A "reduction of possible fish populations" is mentioned. This statement does not appear to identify anything and should be rephrased.

Response:

This sentence has been rephrased to indicate affects on the aquatic ecosystem as a whole.

4. Comment:

Refer to page 7, paragraph 4 (DEIS) - If farming practices leave soil as vulnerable to sheet erosion as stated, corrective steps should be taken by responsible agencies. We suggest that these agencies be identified and that this problem and other sources of pollution to the river be more thoroughly discussed.

Response:

Corrective actions are and have been underway for many years. Technical expertise on sedimentation control of upland areas may be obtained from the U.S. Geologic Survey, U.S. Forest Service, U.S. Department of Agriculture, County Extension Agents, Soil Conservation Districts. Universities may supply additional information through the Landscape Sections of their Agricultural Departments. Other sources of pollution include urban storm runoff, industrial and municipal wastewater discharges. These are not unique conditions. The Corps of Engineers has attempted to address these problems in its regional wastewater management studies. The Detroit District's report, Wastewater Management in Southeastern Michigan (1974) should provide substantive and correlative information in this regard. There is also an on-going study, The Lake Erie Wastewater Management Study, being conducted by the Corps' Buffalo District which should provide more information in the near future.

5. Comment:

Refer to page 13, Table G (DEIS) - The criteria presented in this table should be identified as either EPA or State of Ohio criteria. Describe what is meant by the term "selected."

Response:

In order to avoid confusion, the table has been removed from the FEIS.

6. Comment:

Refer to page 15, items 2.9 and 2.10 (DEIS) - More thorough data and associated information on fish and wildlife is needed.

Response:

Additional data and information has been added to the Final EIS. See Sections 2.42-2.44 and 2.45-2.48.

7. Comment:

Refer to page 15, Table 1 (DEIS) - A better citation is needed on the sources of data presented here.

Response:

An updated commercial fish catch table (Table L) has been included in FEIS. This information was obtained from U.S. Department of Commerce, Fisheries Division.

8. Comment:

Refer to page 16, item 4, paragraph 3 (DEIS) - It is stated that the bottom habitats of dredged areas will improve after the polluted sediments are removed. It should be indicated that such relief will be only temporary, and that the time between maintenance projects could be extended if farming and industrial soils practices were upgraded. Also, shipping channels are less than ideal habitats for benthic populations (re: fish and wildlife studies in the St. Marys River by Jarl Hiltunen).

Response:

See Comment No. 8, U.S. Department of Commerce. Paragraphs 4.06 thru 4.09 elaborates this suggested improvement.

9. Comment:

We do not agree that nutrients and heavy metals won't be reintroduced into solution or suspension as a result of dredging. This is the reason why dredging was ruled out in the mercury tainted sediments in the St. Clair River. We feel that the chances of these materials being released into Lake Erie are enhanced by the dredging activity.

Response:

The FEIS discusses this subject in paragraphs 4.10, 4.11 and 5.04. During dredging, nutrients and heavy metals may be reintroduced from the sediments where they have been in a stable, non-reactive status. The amounts of nutrients thus released are insignificant compared to the tributary contribution to western Lake Erie. Studies conducted under the auspices of the Waterways Experiment Station, U.S. Army Corps of Engineers, have indicated that the release of micro-toxic heavy metals (Ca, Fe) from sediments

as insignificant to be harmful to aquatic life. Preliminary data from ongoing studies involving reintroduction of macro-toxic heavy metals (Zn, Hg) are inconclusive to date.

10. Comment:

Refer to page 18, item 4.3 (DEIS) - It is stated that the impact of disposal into a confined diked area is considered minimal. We suggest that the impact on the inhabitants or potential inhabitants in the disposal area should be considered.

Response:

Section 4.22 of the Final EIS covers this topic.

11. Comment:

Refer to page 18, item 5 (DEIS) - The efforts that are being taken to eliminate or reduce any adverse effects of maintenance dredging operations should be described here.

Response:

The efforts taken to minimize adverse effects of maintenance operations are discussed in paragraphs 1.07, 4.20, 4.21, 4.23, and 5.05. The major effort is the containment of polluted dredged materials in diked disposal areas.

12. Comment:

Refer to page 19, paragraph 2 (DEIS) - It is stated that fish species avoid the disturbed area during dredging operation and will return after the operation is completed. It is also stated that benthic organism will recolonize. These claims should be substantiated from the literature.

Response:

References are contained in the Final EIS, paragraphs 4.08, 4.24, 4.25, 5.02, and 5.04.

13. Comment:

Refer to page 20, paragraph 1 (DEIS) - It is stated that polluted material would "gradually seep into Lake Erie." We suggest that more definite information be provided.

Response:

This sentence has been changed to read: Removal of the polluted

sediments from the harbor channels and deposition into diked disposal sites will reduce the possibility of the sediments being discharged into Maumee Bay and Lake Erie during periods of increased flow and velocity of the Maumee River.

14. Comment:

Refer to page 20, item 6.2, paragraph 1 (DEIS) - We suggest that it be thoroughly discussed how this alternative is ecologically detrimental.

Response:

The open water alternative is discussed in Section 5 and paragraphs 6.18-6.20 of the FEIS.

15. Comment:

Refer to page 20, item 6.2, paragraph 3 (DEIS) - The location of the site being prepared for future disposal should be given.

Response:

The location of the future disposal site is on Figure 3 of the Final EIS.

16. Comment:

Refer to page 20, item 7.1 and 7.2 (DEIS) - These sections should discuss the environmental impacts relative to short and long-term effects. This is the purpose of an environmental impact statement.

Response:

Section 7 of the Final EIS has been revised to discuss short and long-term effects of the project.

17. Comment:

Refer to page 21, item 8, paragraph 3 (DEIS) - The type of future development considered for the completed diked island, and future maintenance that may be necessary to prevent the escape of the polluted materials, should be discussed.

Response:

Response No. 2, Health Planning Association of Northwest Ohio, on the following page addresses a similar comment. Please refer there for answer.

Lake Erie Advisory Committee

1. Comment:

LEAC finds it hard to understand why the draft EIS has not been coordinated with the U.S. Army Engineer District, Buffalo, which has been charged with the Lake Erie Wastewater Management Study (April 1974) by Congress pursuant to Sections 108 d and e of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500).

Response:

The Detroit and Buffalo Districts are fully aware of each other's efforts. Conclusions and recommendations in the Phase I report (Lake Erie Wastewater Management Study) with respect to alternative management systems will be incorporated into Detroit District dredging activities in western Lake Erie. The results of Detroit District monitoring programs to validate the efficiency of confined disposal facilities will be made available to the Corps Buffalo District as well as to the public.

2. Comment:

The draft statement prepared by the Detroit District is not comprehensive in scope.

Response:

The DEIS has been extensively revised with additional information and data; the FEIS should be more comprehensive in scope.

3. Comment:

LEAC strongly recommends that the provisions of P.L. 92-500 be incorporated into this draft EIS and that the expertise gained by the Buffalo District be utilized even if the two Corps Districts must be merged to achieve this end.

Response:

See Response to Comment No. 1, LEAC. You will note in addition that the Lake Erie Wastewater Management Study is targeted for completion in 1981. Maintenance dredging operations cannot be forestalled that long without seriously affecting waterborne commerces in the Toledo area.

4. Comment:

Can't Maumee Bay be a demonstration project under P.L. 92-500 for the rehabilitation and environmental repair of Lake Erie?

Response:

Maumee Bay as part of Lake Erie is included in the Lake Erie Wastewater Management Study. Whether or not it can become a demonstration project is a question that should be addressed to the project manager of the Lake Erie Study.

Health Planning Association of Northwest Ohio

1. Comment:

Will consideration be given to a program that would monitor, on a yearly basis, the quality of sediments in the Harbor in order to more accurately determine the present situation? Your statement on page 2 indicates that the last analysis of sediments was done in 1967 by the Great Lakes Research Center.

Response:

An extensive monitoring program is being conducted in Maumee Bay by the Corps, but this study includes only biological and water quality samples through calendar year 1975. EPA's 1973 and 1975 sediment data has been received and incorporated into the Final EIS in Tables H and I in Section 2. The EPA has a program which periodically - not necessarily annually - analyzes sediments in the Great Lakes' harbors and channels.

2. Comment:

Upon completion of deposition of the dredged material into the disposal site, which unit of government would receive the site, what possible land uses have been discussed or considered, and who will be responsible for inspecting the site as to its structural status? What provisions have been made for the continual upkeep of the disposal site?

Response:

The present island disposal site being utilized is on a lake bottom property deeded to the Toledo-Lucas County Port Authority. This Port Authority was created pursuant to Chapter 4582 Ohio Revised Code in July 1955 by ordinance of the City of Toledo and resolution of the Board of

Lucas County Commissioners with legal authority and financial capability to enter into local assurance agreements with the United States. Future use of this island is undetermined at this time but it would belong to the Port Authority. The new offshore disposal site currently under construction is located on land also deeded to the Port Authority. The Authority pledged itself to provide the easements and assurances as required by P.L. 91-611. Ownership of this property would be retained by the Authority after disposal operations are completed. It was intended to use this land for marine operations and industrial development. Under P.L. 91-611 the local interest must maintain the facility in a manner satisfactory to the Secretary of the Army. Note paragraph 9.08 for additional information.

3. Comment:

While the present need for dredging is apparent, this method of control does little or nothing to remove the cause of the problem. What is the status of alternative means of disposal and/or control currently being researched or studied? What is being done or planned to reduce the sediment loading in the Maumee Bay and associated waters?

Response:

Studies are underway by the U.S. Army Corps of Engineers Waterways Experiment Station, to determine the reclamation value of the dredged material; to evaluate disposal sites; to research containment area operation; and to investigate the formation of artificial wildlife habitats. A survey report of the Maumee River Basin, completed by the Corps in 1974, confirmed flood problems and stressed a need for flood plain management. The Department of Agriculture's Soil Conservation Service (SCS), on the Federal level, aids and directs programs to mitigate soil erosion and sheet runoff. State and County soil conservation districts are active in the same programs to foster better agricultural practices to eliminate soil loss. Many states are enacting laws to curb construction practices that lay bare large tracts of earth for long periods of time, e.g. highway construction, housing and shopping center developments. The EPA oversees the vast program to funnel municipal and industrial wastes into treatment facilities to remove solids, dissolved solids and chemicals before the effluents are discharged to the waterways.

The National Association of River and Harbor Contractors

1. Comment:

As outlined in Paragraph 1.2, the entire content of the Draft Statement deals only with the required maintenance dredging of the Toledo Harbor, Ohio Federal Navigation Channels. In order to be in conformance

with 33US Code of Federal Regulations 209.145 (f) (vi) and (g) (1) (vi) the Statement should include dredging requirements of non-Federal interests in the Toledo area.

Response:

This environmental statement concerns dredging done at authorized Federal projects. Under the authority of the River and Harbor Act of 1899, any dredging, excavation or fill in navigable waters performed by other parties requires a permit from the Corps of Engineers. In evaluating a permit application, the Corps of Engineers will thoroughly analyze the impacts of the proposed activity upon the public interest, the needs and welfare of the people and the environment. Permit dredging of polluted sediments in the Toledo Harbor area for the years 1966 to 1970 averaged 170,000 cubic yards per year. At present, non-Federal work is deposited at any available approved location. These dredgings (if polluted) will be deposited into the confined disposal site being constructed. Non-Federal permit work was not addressed in the public notice for maintenance dredging at Toledo Harbor, dated 8 August 1974.

2. Comment:

Paragraph 1.5 of the DEIS and several succeeding paragraphs limit the description of dredging operations to specific Government-owned and operated hopper dredges. Since the Statement should include non-Federal dredging, which will not be done by Government-owned dredges, and also to maintain flexibility in the methods used for dredging the Federal channels, a description of the dredging operations should include bucket and hydraulic dredging as well as hopper dredging.

Response:

Response No. 1 above explains why non-Federal dredging is not included in EIS. Other types of dredging methods have been described and discussed in the FEIS. See Sections 6.04-6.09.

3. Comment:

It would appear not to be in the best interests of the Government to limit the dredging to Government-owned hopper dredges. Dredging loads may require the use of the Government-owned dredges elsewhere, or economic considerations and Corps policy may indicate the desirability of accomplishing the work by contract methods. The equipment used might then be bucket, hydraulic, or hopper type dredges.

Response:

Section 6A(1) describes the preferred use of the various types of dredges and 1.10 the advantages of hopper dredges. It has been more advantageous for the Corps to utilize Government-owned hopper dredges for the Toledo Harbor Channels.

4. Comment:

Changing the sentence "As currently proposed, dredging will be performed by either a hopper, dragline, clamshell or bucket dredge plant," (DEIS A-114), to include hydraulic dredging, would serve the best interests of the Government.

Response:

For Toledo Harbor, work will be carried out as planned utilizing hopper dredges.

5. Comment:

On page 5 of the DEIS, three advantages are listed for utilizing the hopper dredge. Listing alleged hopper dredge advantages without including the advantages of other types of dredging may be self-defeating and subject to improper or invalid conclusions.

Response:

Paragraphs 6.04-6.07 of the FEIS discuss the Alternative Dredge Types.

6. Comment:

The first sentence of Paragraph 4.2 of the DEIS is not necessarily true. It states that "Dredging of polluted sediments does not, in itself, effect any substantial long-term environmental or ecological benefits." Although immediate effects during dredging tend to have a "minor negative impact" as you state in the second sentence of the paragraph, we believe long-term effects may be beneficial. There is no scientific proof available today regarding the long-term effects of removal.

Response:

Additional information has been added to the FEIS. See Section 4.02, 4.03, 4.07, and 4.09. Uncer certain conditions, we believe your statements are correct.

7. Comment:

We do not think it proper to state categorically that water dumping of polluted material is ecologically detrimental.

Response:

A group of consultants in reviewing the report "Dredging and Water Quality Problems in the Great Lakes," Volume 1: A Summary Report, concluded that water dumping of polluted sediment is "presumptively undesirable" and "the ecology of the Great Lakes would be affected adversely if the practice were continued." Just how much the lakes would be affected adversely is not known.

8. Comment:

We believe an explanation should be inserted in the Toledo Statement, and for that matter, in all Environmental Impact Statements dealing with dredging, regarding the inconclusiveness of evidence indicating that the abandonment of open water disposal considerably improves the lake environment or substantially decreases the danger of further ecological deterioration.

Response:

Although limited studies are inconclusive as to the effect of open water disposal, the Corps operates under Code 33 CFR 209.145 (b) (1) governing open water disposal of polluted sediments. Further studies are underway at the Waterways Experiment Station that should support this policy or indicate the disposal method is not detrimental. Also see Response No. 7.

Toledo Metropolitan Area Council of Governments

1. Comment:

Remove the word "Polluted" from the title of the DEIS and change "Michigan" to "Ohio."

Response:

This has been done in FEIS.

2. Comment:

On page i (DEIS), change the title as above. Environmental Impacts should be separated as positive, or negative impacts. In item 3(A), last phrase of 1st sentence should read "a possible reduction of fish populations."

Response:

(1) Title has been changed. (2) Format of SUMMARY follows Army ER 1105-2-507. (3) Sentence has been removed.

3. Comment:

In the DEIS, the 1st sentence of Section 1.1 on page 1, change assigned to authorized. Last sentence should be based on maintenance for current shipping.

Response:

The first sentence of Section 1.1 was corrected as found in paragraph 1.01 of the FEIS. Maintenance of the harbor is based on current shipping needs.

4. Comment:

Refer to page 1, Section 1.2, 1st sentence (DEIS). Remove the word polluted, as it should be included in the impacts of dredging.

Response:

This has been done in the FEIS, Section 1-A, Scope of Work.

5. Comment:

Refer to Section 1.3 (DEIS). Authorization does not provide for, it empowers; river or mile markers are not mentioned; needs to be more definitive.

Response:

The act empowers and therefore does allow or provide for the dredging and maintenance; Sections 1.02 and 1.04 include the location of the marker in Lake Erie and a description of the upper limit of the project; a project map (Figure 1) is provided to understand the project dimensions.

6. Comment:

Section 1.4 of the DEIS, document source of classification; indicate if samples are representative of channel or bay sediment; what is date of the latest samples.

Response:

Classification is from U.S. EPA (See Appendix C for correspondence);

the table (now Table F) has been changed to cover only the river sediments; the latest data is from 1975 (EPA) and is tabulated in Table I. The sampling locations for various years are plotted on Figure 6.

7. Comment:

Section 1.5, explain why 50% of the total surface area is non-polluted, but the ratio of dredged material is 80% polluted and 20% non-polluted; should state only that the polluted material is being contained as a part of the dredging operations as it hasn't been established that polluted material inherently requires containment; area and quantity for open lake dumping should be required; meaning of the last sentence in the 2nd paragraph is unclear; indicate what happens to the permit dredging.

Response:

(1) The above data is correct. More sediments are dredged from nearshore areas since most of the material settles out near the river mouth. (2) Only polluted material is contained. (3) Figure 3 illustrates the area for open lake disposal and for quantities see Table A. (4) A total 2,507,000 cubic yards of sediments was removed in 1974. (5) Applications for permit dredging are handled separately and not part of the authorized Federal project. See C/R #1 for National Assoc. River and Harbor Contractors. Permit dredging is normally allowed to private concerns for providing access and docking to commercial piers and wharfs located outside the limits of the Federal channel. If the material dredged under such permits is polluted, it must also be placed into an approved CDF.

8. Comment:

Last sentence states that Toledo has fewer high water level rises, and this implies Toledo is not affected by high water levels.

Response:

Nothing is implied in the statement. Toledo does have high water levels, though they occur during northeasterly winds and these winds blow less often than southwesterly winds.

9. Comment:

Section 2.4, Population - 2nd sentence does not identify source; current housing shortage exists and, based on all known studies, will continue to exist; document growth areas.

Response:

(1) Source of forecast in 2-E, 2nd sentence is the "Metropolitan

Toledo Population Forecasts," April 1972 and is part of a series published by the Toledo Regional Plan for Action. Forecasts are matters of opinion and leaders in promotional areas can affect changes that are not easily predicted. (2) Statements on growth areas have been documented in many studies conducted for the Toledo-Lucas County Planning Commission and is documented in the "Regional Population Distribution," December 1966, Technical Report 3.13, page 8.

10. Comment:

On Table C, there are no passenger lines using the harbor?

Response:

This data was obtained from Waterborne Commerce of the United States, part III[10]. The passengers were ship personnel. To avoid further confusion, this section of the table has been removed in the FEIS.

11. Comment:

Section 2.7, Sediment - If 2,212,000 tons of total solids is carried by the Maumee River into the bay and most of this is carried into the lake, what is being dredged (1,175,000) in the river and bay?

Response:

The sentence referred to in your comment did not say this tonnage of solids was being carried into the bay but stated, "the Maumee River averages 2,212,000 tons per year of total solids, much of which is carried directly into the lake." Using the word "lake" does not preclude the bay area since Maumee Bay is a part of Lake Erie. However, the complete breakdown of sediment totals as shown in the recently published October 1975 draft appendix of the Maumee Basin Level B Study is as follows: Of the total 2.2 million tons carried by the entire river, 1.2 million is discharged into Maumee Bay - 1 million being deposited elsewhere in the river bed; another .11 million tons of sediment enters the bay from shore erosion and .028 million from the Ottawa River or a total contribution of 1.34 million tons into the bay area. Of this amount, approximately half or 641,000 tons is deposited in the bay and lower 7 miles of the Maumee River encompassing the navigation channel and 697,000 tons remains in suspension and is carried outside the bay into Lake Erie. Of the material deposited in the bay, approximately 85% is deposited in the navigation channels and is subsequently dredged. Thus only about 80,000 tons of sediment are actually accumulating in the bay each year. The figure of 1,175,000 was the amount of average annual dredgings expressed in cubic yards as shown in Section 1.5, DEIS.

12. Comment:

Section 2.8, 1st paragraph (DEIS) - A highly enriched aquatic system is not by necessity, or typically loaded with bacterial communities such as those found in Maumee Bay; what are the pollution tolerant benthic invertebrates mentioned in the last paragraph? Are they any different than species which would be found here if the sediment was nonpolluted?

Response:

This statement has been modified in the Final EIS (2.35); the pollution tolerant benthic organisms are discussed in paragraphs 2.38-2.41.

13. Comment:

Section 2.10 (DEIS) - Identify spawning areas and describe spawning run.

Response:

There is limited information concerning spawning activity available in Maumee Bay; this has been included in FEIS, paragraph 2.48.

14. Comment:

Continued maintenance dredging has a serious impact on land use. All direct and indirect relationships caused or created by an action should be addressed (Section 3) in the Draft EIS.

Response:

There is no doubt that the creation of a deep-draft navigation channel through Maumee Bay and into the Maumee River spurred the development of industrial and commercial enterprises along the Toledo waterfront. Today a major part of the river frontage is occupied and utilized by heavy industry, port, and storage facilities using the advantages presented by waterborne transportation. Therefore, yes, the navigation channel has had a large influence on land use. To your statement that continued maintenance dredging has a serious impact on land use, let us reply by saying that discontinuance of maintenance operations of the Toledo Harbor would pose far more serious problems, for the waterfront enterprises would become useless if denied access to water transportation.

In regard to the future developments/uses in store for the confined disposal facilities, this can be controlled by local officials and authorities through their zoning power. It is our understanding that the existing island disposal area, when released to local authority, would be used for recreational

purposes (FEIS 3.05); the disposal facility now under construction is proposed as a site for future port development (FEIS, 3.05); the use of these constructed islands as stepping stones for a trans-bay highway has never been officially proposed to or by the Corps of Engineers. The areas of fill along the shoreline of the Maumee River, namely the Riverside Park, Penn 7, and Penn 8 sites (FEIS, 1.16) were not accomplished under the authority of Public Law 91-611 and the use of this newly formed fast land reverts to the riparian owners, i.e., the City of Toledo and the Penn Central Railway Co., respectively.

15. Comment:

Section 4.1 (DEIS) - 1st paragraph, 1st sentence, change "is necessary" to "will"; 2nd paragraph, delete as it is a reiteration of the 1st paragraph; 3rd paragraph, 1st & 2nd sentences, change to read, "bottom sediments and dredged areas may improve" instead of "will improve"; positive impact is that removal reduces the total volume of polluted materials; possible positive impacts by diking are increased wildfowl feeding and fish habitat areas.

Response:

(1) At the present time, maintenance dredging is necessary to maintain the required channel depth. (2) We feel the second paragraph clarifies the positive aspects. (3) Section 4 has been extensively rewritten for the FEIS and those specific sentences are no longer presented in that manner; nevertheless, may instead of will might well have been a better choice. (4) This has been covered in paragraphs 4.07 and 4.09 of the FEIS. (5) The FEIS (4.22 & 7.04) recognizes the possible favorable impact on wildlife habitat by the diking; in fact, this has already been evidenced by terns nesting on the stone dikes of the confined disposal site now under construction.

16. Comment:

DEIS, Sub-section 4.2: Points out numerous grammatical and sentence structure errors. Also, comments that (1) turbidity caused by dredging should be identified in terms of standard turbidity levels where no dredging is in operation; (2) "immediate" dredge areas should be more specific; (3) believes magnitude of the effect on water quality by dredging is not impossible to determine; (4) limited sampling cannot support statement that conditions will return to original levels; (5) the fact that water quality conditions are already poor is not a reason for failing to evaluate the impacts of an operation which may cause further quality degradation.

Response:

DEIS has been extensively rewritten, grammar and structure should be improved. Subsequently, other responses to above comments are: (1) We

are not aware of standard turbidity levels - either Federal or Ohio for the Maumee River or Bay to make a comparison; therefore, the subject is referred to in general terms; (2) the "immediate" dredge area refers to a radius of about 200 feet from an active dredge (paragraph 4.17 in the FEIS); (3) See paragraphs 4.12 through 4.17 and Tables N and O for discussion on dredging impacts based upon actual studies. These data would confirm that such magnitudes can be determined as you stated; (4) the statement that conditions return to original levels has been deleted from the EIS; (5) your accusation is well taken; evaluations of dredging impacts are based on other studies and references, some located in Maumee Bay and some located elsewhere, but we feel this section in the FEIS has been redressed with sufficient information for making a reasonable evaluation. In the meantime, several studies are ongoing in Maumee Bay which should, in the near future, provide much more detailed and precise information concerning dredging and disposal impacts on the environment.

17. Comment:

Concerning Section 4.3 (DEIS):

(A) Disposal Impacts - should be a subheading under 4.2 as an indirect impact.

(B) 1st Sentence - any impact from spillage may be minimal, however, it isn't the only possible impact.

(C) This section should include -

1. An examination of possible impacts caused by wildfowl feeding on carrion and other polluted organisms at the disposal site.

2. Leachate seepage, which currently exists at Cullen Island site.

3. Decay of exterior wall of Cullen Island which allows polluted material to return to bay.

4. Aesthetic impact of a walled diked area in what was open bay water. This visually effects Point Place residents and soon to effect some residents of East Toledo and Oregon.

Response:

(A) We prefer to address the subject as a subheading to the Section (4). (B) The fact that spillage is not the only impact from disposal operations is recognized in the FEIS, refer to paragraphs 4.19-4.27. (C)1. This is

discussed in paragraph 2.44 FEIS. (C)2. The Detroit District is not aware of any current or past leachate seepage from the island disposal site nor (C) 3. is the District aware of any dike decay that allows polluted material to return to bay waters. If these conditions exist, they have not been called to our attention. If your comments are based upon the Arthur D. Little contract report accomplished for the Dredged Material Research Program of the U.S. Army Engineer Waterways Experiment Station which mentions the outer dike (at the Toledo CDF) has been flattened, permitting the secondary dike to be severely eroded in places, the report also states that this erosion has not threatened the ability of the disposal area to contain dredged material. (C)4. Aesthetic impacts - based upon interviews with neighboring residents - are apparently insignificant.

18. Comment:

Concerning Section 5 (DEIS):

(A) 1st Paragraph - 2nd Sentence should not be in the introductory paragraph - this statement is one concerning an unavoidable impact and should be in the succeeding paragraphs.

(B) 2nd Paragraph, 1st Sentence - effect of dredging will be slight should read: probably will be slight.

(C) 2nd Paragraph, 1st Sentence - and will be difficult to evaluate, why? (technology, unavailable funding)?

(D) 3rd Paragraph, 2nd Sentence - The use of the words stable and non reactive should be clarified to mean, by their physical position (out of solution, reduced surface area) these pollutants are stable and non reactive. The implication in the original sentence is one of chemical stability and non reactivity.

(E) 3rd Paragraph, 4th Sentence - fish population studies have not been conducted to substantiate this movement of fish.

(F) Recolonization may occur, but whether the same species recolonize has not been documented.

Response:

(A) This sentence was deleted in the FEIS. (B) This sentence has been changed to read, "the net effect of dredging will be insignificant." (C) The reason it would be difficult to evaluate is due to the similarities in water quality of the Maumee River and inner Bay. See paragraph 5.03 of the FEIS. (D) The physical alteration by dredging between the sediment-water interface could effect and change a chemical alteration. See paragraphs 4.06

and 5.04 FEIS. (E) Of course, the assumption here is that fish are inhabiting the areas of dredging, and studies of fish behavior have indicated that fish will avoid areas of disturbance. (F) Our conclusions based upon information as outlined in the FEIS, paragraphs 2.35 through 2.41, are expressed in paragraphs 4.24 through 4.26, i.e., the area benthos is represented by few species and we expect only these species to be able to colonize this environment.

19. Comment:

Section 6 (DEIS) - 1st paragraph, item 4 and 5 should read 4) Diked Dredge Disposals and 5) Other Disposal Methods.

Response:

This section in the FEIS has been rewritten discussing the confined disposal facility and open lake disposal as well as other methods of dredging.

20. Comment:

Concerning Section 6.1 (DEIS), Discontinuation of Maintenance Dredging:

(A) 2nd Sentence - how severely would the accumulation of sediments reduce utilization of the port. If the entire channel is not dredged each year, what substantiates the 2 year figure.

(B) Maintenance dredging is not being performed to prevent pollution entering Lake Erie, this is a benefit received from dredging. This should not be used as a justification for dredging, since it was not the reason dredging was performed in the beginning.

Response:

(A) Based upon the fact that removal of an annual average of 1,551,300 cubic yards of sediments is required to maintain channel project depths, it is the estimate of experts in the field - those who navigate the Toledo channels - that within two years lake carrier vessels of 25 foot draft would not be able to use the harbor. Except for the navigation channel, the depth of Maumee Bay is 6 feet or less (IGLD). (B) Our intent in the statement, "The discontinuance of dredging would not terminate pollution from affecting the lake," is certainly not as indicated in your comment. As you point out, this benefit of pollution removal is a mere side effect. It has not been promoted as justification for dredging since the maintenance dredging program is based on law as discussed in paragraphs 1.04, 1.05 and 6.01.

21. Comment:

Concerning Section 6.2 (DEIS), Open Lake Dumping of All Sediments:

(A) 2nd Sentence - should read: This apparently is the most economical alternative. An unsatisfactory cost/benefit analysis in "Confined Disposal Facility for Toledo Harbor, Ohio" doesn't address social or environmental cost, therefore it should not be used here to justify this method as the least cost effective.

(B) 1. 2nd Paragraph should be Section 6.3.

2. What cost study analysis or feasibility study concluded this method wasn't economical.

3. Last paragraph should be under 6.4. This paragraph should discuss Diked Dredge Disposal as an alternative and state its economic cost/benefit (physical, social and environmental cost).

4. A 5th possibility which is not addressed is shoreline development using the unpolluted dredge. South Maumee Bay shore erosion possibly could be checked with this method. Access may be a problem but it should be addressed.

5. A 6th possibility which is not addressed in this impact statement and insufficiently examined in "Confined Disposal Facility for Toledo Harbor, Ohio," is land disposal. A complete cost analysis should be completed on all possibilities.

Response:

(A) The Alternatives section has been extensively rewritten in the FEIS. The conclusion that the proposed method is the least cost effective is based on the preceding information provided in the EIS. (B)1. Pretreatment of dredged sediments before disposal is discussed in paragraphs 6.21 through 6.25 of the FEIS. (B)2. The Corps of Engineers conducted studies investigating the possibilities of treating dredged sediments to remove pollutants before disposal in the mid 1960's. Refer to Dredging and Water Quality Problems in the Great Lakes, Summary Report, March 1969, Buffalo District. Economic analyses were included in this study. (B)3. Diked Disposal is no longer an alternative since all the sediments must be confined. (B)4. Shoreline disposal along Maumee Bay would be kindred to land disposal because of the shallow waters that would have to be traversed to reach such sites. The problems of such an alternative are similar to those discussed in paragraph 6.21 for the Land Disposal Alternative. (B)5. Land disposal

possibilities were very thoroughly examined in the FEIS, "Confined Disposal Facility for Toledo Harbor, Ohio." It has been our experience that the use of upland sites for the disposal of polluted sediments, because of legal constraints and citizen opposition, are rare opportunities indeed. Land disposal, as an alternative, is discussed in 6.21 FEIS and reasons for not considering this means as a viable alternative are delineated therein.

22. Comment:

Concerning Section 7.1 (DEIS):

(A) The intent of this section is to compare relative values of short term use of the environment and long term productivity by maintenance and enhancement. Continued use of the Toledo Harbor for shipping is the cause not the effect. The effect should be what shipping (short term use) will do to the local economy and the environment of the bay.

Response:

Continued use of the Toledo Harbor for shipping could not be effected without annual maintenance dredging. Maumee Bay outside of the navigation channel is 6 feet or less in depth and the channel would quickly fill in because of the huge amounts of sediment carried into the bay by the Maumee River. These items have been discussed in the EIS. Therefore, in our opinion, the short-term effects of maintenance dredging is the continuance of cargo vessel utilization of the Toledo Harbor at the expense of limited destruction of the estuary's biosphere caused by the dredging work and movement of deep-draft ships. Long-term impacts would be the economic benefits realized by the Toledo area from the continued viability of the port or the reverse (loss) if the port facilities could no longer receive ships. Ecologically, over the very long-term, without the continued removal or retention of a large percentage of the incoming sediments, Maumee Bay would eventually succeed to a terrestrial environment; there would be no bay. Or less severe, the species composition would never reach a true balance or maximum sustained population; however, an equilibrium of a kind would be established to accommodate the existing conditions.

23. Comment:

Concerning Section 7.2 (DEIS):

(A) This section should mention the multiplier effect of port development and growth. It should reiterate gains from shipping in a long range program. In addition, it should develop long-range benefits realistically by objectively stating long range environmental committments and continued disposal needs. This section should objectively prove the long range productivity gain over the short run losses.

Response:

In the development of an EIS for maintenance activities, all significant effects on the environment have been considered. Such considerations differ from those for a project in a planning status, for instance, and discussion is limited to only the environmental effects of the operation of the project. This project was established under Federal auspices in 1899, so the long-range impacts and effects are readily apparent and these together with the short-term effects of the annual maintenance operation are described in the text.

24. Comment:
Concerning (DEIS): Irreversible and Irretrievable Commitment of Resources Which Would Be Involved in the Proposed Action Should It Be Implemented:

(A) The 150 acres of channels and turning basins committed to shipping which could not exist without dredging should be mentioned.

(B) The 248 acres of diked enclosure being built across the channel as a depository for dredged material should be mentioned. This is committing the total bay and river to 400 acres to a fixed useage.

(C) The 2800 acres which may be committed to diking if alternative methods of disposal are not developed in 10 years should be addressed.

(D) Current flow in the bay will be permanently altered.

(E) Temporary and possibly permanent loss of fish habitat and/or existing wildfowl feeding areas in the bay will be committed by diked disposal.

(F) The short and long range irretrievable commitments must be addressed.

Response:

In sequence with above comments: (A) This acreage does not represent an irreversible commitment. If maintenance dredging were stopped, the navigation channels would eventually fill to depths common to other areas of the bay. This situation has occurred in the past when the original channel dredged in 1877 was abandoned in 1892. The old channel became a sedimentation sink, and no evidence of the former channel was apparent in the 1961 bathymetry of the bay. (B) The diked enclosure under construction is mentioned

paragraph 8.04 of the FEIS. Development of the diked disposal areas would be considered for all practical purposes an irreversible action. (C) This figure (2800 acres) appears extreme as 150 acres of bay have been utilized since 1961 for disposal and the new site (242 acres) will contain the dredgings for another 10 years. The total for 24 years is approximately 400 acres leaving 2400 acres from your original figure of 2800 acres. It would seem that you are projecting disposal sites for over 100 years. Studies are being conducted at the U.S. Army Waterways Experiment Station to determine other ways to handle the polluted dredged materials. We hope that researchers are able to discover more beneficial methods, both ecologically and economically sound, to utilize dredged materials. If industrial and municipal effluents are regulated and upland erosion and soil runoff controlled, the quantity of dredgings could be lessened. Management of land activities is not easily accomplished and requires coordination, cooperation and financial encouragement. (D) The current flow would not be permanently altered by the maintenance dredging; for if dredging were to cease, the river currents would revert to the influences of the filling and shoaling. The confined disposal islands, however, would have minor influences on currents because water movement in the bay outside the channel is by weak littoral currents. These current movements are not considered significant. (E) It was previously reported that there was a fish spawning bed within the area of the proposed facility. Bottom sampling by the Ohio Division of Geological Survey and the Corps of Engineers indicates the area of the modified facility to consist primarily of silt underlain by hard clay. Gravelly areas which would correspond to spawning beds were not located.

It is reported that the site of the 242 acre facility under construction represents a spawning run for fish (white bass and walleye) migrating into Maumee Bay and River. A spawning run is reported to exist northwest of the Toledo Edison thermal plume and southeast of the shipping channel, through the site of the proposed facility. The fish follow the southeast side of the structure and could become trapped in the south bay which will be closed off from the river channel by the proposed structure. There is, however, 260 feet between the channel and the disposal site which provides a possible route up the river. In addition, the shipping channel may serve as a spawning route. The proposed disposal area would remove 242 acres of open water. Ducks have been reported to be in the area covered by the facility, but since the benthic organisms are dominated by pollution tolerant species such as sludge worms (with little accompanying vegetation) this area is not considered a good feeding area. It has been noted that waterfowl congregate near the thermal outflow. The structure bounding the north side of the thermal plume will provide a protected zone from north and northeast winds. Pre-selection investigations indicated that positioning the disposal site in this area of the bay would have little influence on fish and waterfowl resources. (F) The discussion of these commitments attributable to the annual dredging operation has been expanded

in the FEIS, Section 8. Those impacts caused by the new confined disposal facility have been discussed in the environmental statement for that project issued by the Detroit District Engineer and filed with Council on Environmental Quality (CEQ) May 10, 1974.

Toledo Naturalists' Association

1. Comment:

In the statements we have made previously we have not objected to the maintenance dredging for the Toledo Harbor in Maumee Bay. We have objected to the disposal site location in the bay.

Response:

Contained disposal of dredged materials is authorized by the River and Harbor Act of 1970 (Public Law 91-611). The bay disposal site was selected only after exhaustive investigations of other potential areas. Section 123 of P.L. 91-611 in part requires the participating local sponsor to agree to furnish all lands, easements, and rights-of-way necessary for the construction, operation, and maintenance of the diked disposal facility. The environmental statement, Confined Disposal Facility for Toledo Harbor, Ohio, issued by the Detroit District Engineer in February 1974, discusses the methodology which choose the bay disposal site over other alternatives.

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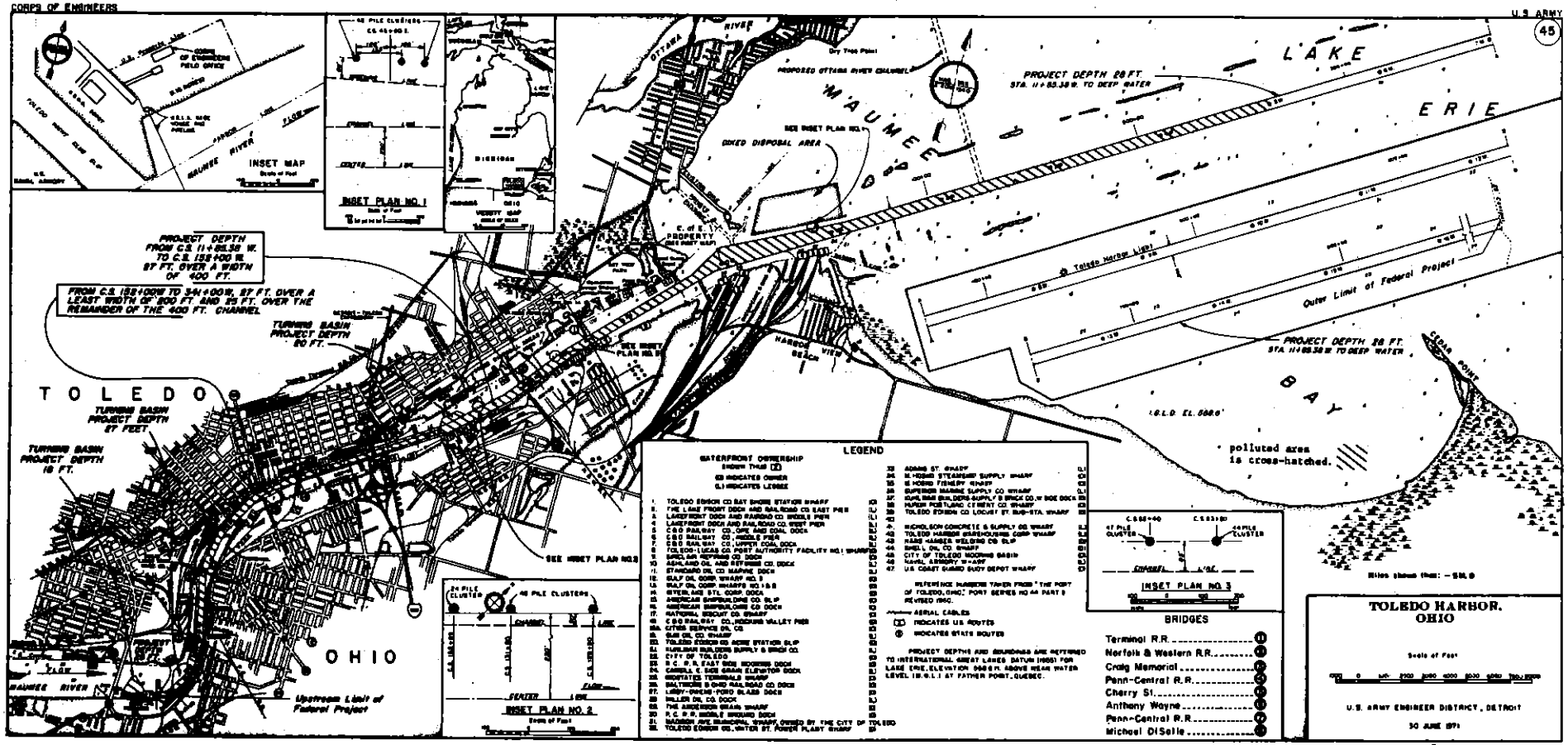

CORPS OF ENGINEERS
U.S. ARMY
45
INSET MAP
INSET PLAN NO. 1
INSET PLAN NO. 2
INSET PLAN NO. 3
PROJECT DEPTH FROM C.S. 11+85.38 W. TO C.S. 158+00 N. 27 FT. OVER A WIDTH OF 400 FT.
FROM C.S. 158+00 W TO 34+00 N, 27 FT. OVER A LEAST WIDTH OF 300 FT AND 25 FT. OVER THE REMAINDER OF THE 400 FT. CHANNEL
TURNING BASIN PROJECT DEPTH 27 FEET
TURNING BASIN PROJECT DEPTH 18 FT.
TURNING BASIN PROJECT DEPTH 30 FT.
TOLEDO
OHIO
MAUMEE RIVER
OTTAWA RIVER
PROPOSED OTTAWA RIVER CHANNEL
DIKED DISPOSAL AREA
HARBOR VIEW
CEDAR POINT
LAKE ERIE
MAUMEE BAY
PROJECT DEPTH 28 FT. STA. 11+85.38 W. TO DEEP WATER
PROJECT DEPTH 26 FT. STA. 11+85.38 W. TO DEEP WATER
Toledo Harbor Light
Outer Limit of Federal Project
I.G.L.D. EL. 568.6'
polluted area is cross-hatched.
Miles shown thus: — 5M.0
SEE INSET PLAN NO.2
SEE INSET PLAN NO.3
Upstream Limit of Federal Project
LEGEND
WATERFRONT OWNERSHIP SHOWN THUS (2)
(2) INDICATES OWNER
(L) INDICATES LESSEE
1. TOLEDO EDISON CO BAY SHORE STATION WHARF
2. THE LAKE FRONT DOCK AND RAILROAD CO. EAST PIER
3. LAKEFRONT DOCK AND RAILROAD CO. MIDDLE PIER
4. LAKEFRONT DOCK AND RAILROAD CO. WEST PIER
5. C&O RAILWAY CO. OPE AND COAL DOCK
6. C&O RAILWAY CO. MIDDLE PIER
7. C&O RAILWAY CO. UPPITY COAL DOCK
8. TOLEDO-LUCAS CO PORT AUTHORITY FACILITY NO.1 WHARF
9. LONG LAKE TERMINAL CO. DOCK
10. ASHLAND OIL AND REFINING CO. DOCK
11. STANDARD OIL CO MARINE DOCK
12. GULF OIL CORP. WHARF NO. 3
13. GULF OIL CORP. WHARFS NO.1 & 2
14. SEVEN AND STL CORP. DOCK
15. AMERICAN SHIPBUILDING CO. SLIP
16. AMERICAN SHIPBUILDING CO. DOCK
17. NATIONAL SEMENT CO. WHARF
18. C&O RAILWAY CO., ROCKWELL VALLEY PIER
18A. CITIES SERVICE OIL CO.
19. SUN OIL CO. WHARF
20. TOLEDO EDISON CO. ACME STATION SLIP
21. FURLBUN BUILDERS SUPPLY & BRICK CO.
22. CITY OF TOLEDO
23. D. C. & B. EAST SIDE WOODEN DOCK
24. CARGILL E. RIVER GRAIN ELEVATOR DOCK
25. HYDROSTATICS TERMINALS WHARF
26. BALTIMORE & OHIO RAILROAD CO. DOCK
27. LAMBY-YOUNG-FORD SLABB DOCKS
28. MILLER OIL CO. DOCK
29. THE ANDERSONS GRAIN WHARF
30. P. C. P. MIDDLE WOODEN DOCK
31. MADISON AVE. MUNICIPAL WHARF, OWNED BY THE CITY OF TOLEDO
32. TOLEDO EDISON CO. WATER ST. ASHERT PLANT WHARF
33. ADAMS ST. WHARF
34. M. HORN STEAMSHIP SUPPLY WHARF
35. M. HORN TRIMLEY WHARF
36. SUPERIOR MARINE SUPPLY CO. WHARF
37. GUNS, BASS (SUN) DEPOT SUPPLY & BRICK CO. W SIDE DOCK
38. HURON PORTLAND CEMENT CO. WHARF
39. TOLEDO EDISON CO. LOCUST ST. SUB-STA. WHARF
40.
41. NICHOLSON CONCRETE & SUPPLY CO. WHARF
42. TOLEDO HARBOR WAREHOUSING CORP. WHARF
43. KANE HANNA WELDING CO. SLIP
44. SHELL OIL CO. WHARF
45. CITY OF TOLEDO MOORING BASIN
46. NAVAL ARMORY WHARF
47. U.S. COAST GUARD BUOY DEPOT WHARF
REFERENCE NUMBERS TAKEN FROM "THE PORT OF TOLEDO, OHIO," PORT SERIES NO.4A PART II REVISED 1960.
AERIAL CABLES
INDICATES U.S. ROUTES
INDICATES STATE ROUTES
PROJECT DEPTHS AND SOUNDINGS ARE REFERRED TO INTERNATIONAL GREAT LAKES DATUM (1955) FOR LAKE ERIE, ELEVATION 568.6 M. ABOVE MEAN WATER LEVEL IN I.G.L.D. AT FATHER POINT, QUEBEC.
BRIDGES
Terminal R.R. 1
Norfolk & Western R.R. 2
Craig Memorial 3
Penn-Central R.R. 4
Cherry St. 5
Anthony Wayne 6
Penn-Central R.R. 7
Michael DiSalle 8
TOLEDO HARBOR, OHIO
Scale of Feet
U.S. ARMY ENGINEER DISTRICT, DETROIT
30 JUNE 1971

Figure 1

HOPPER DREDGE

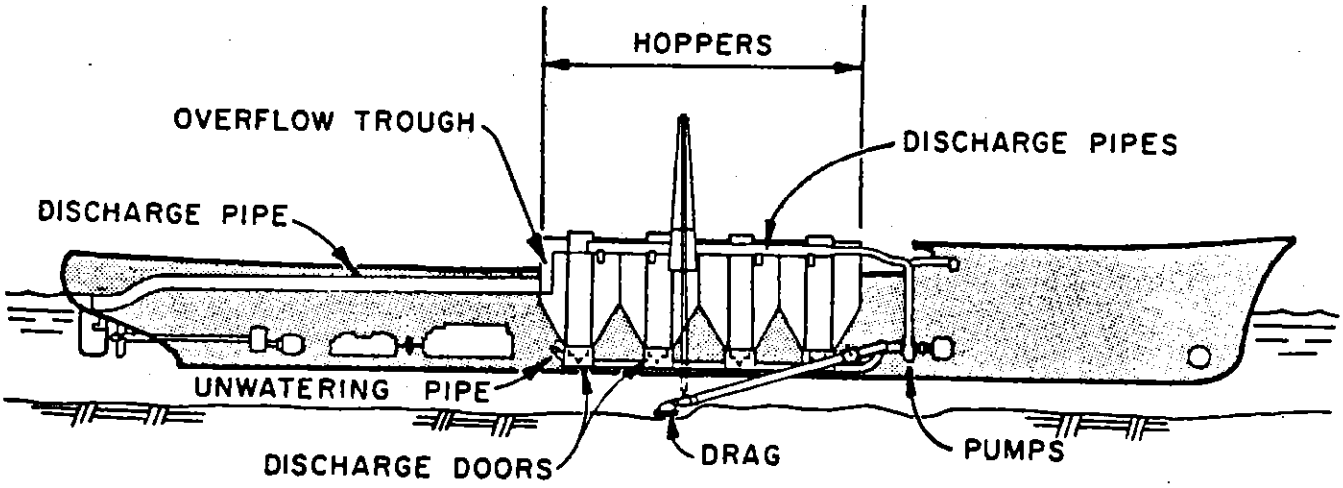


Figure 2

DISPOSAL SITES

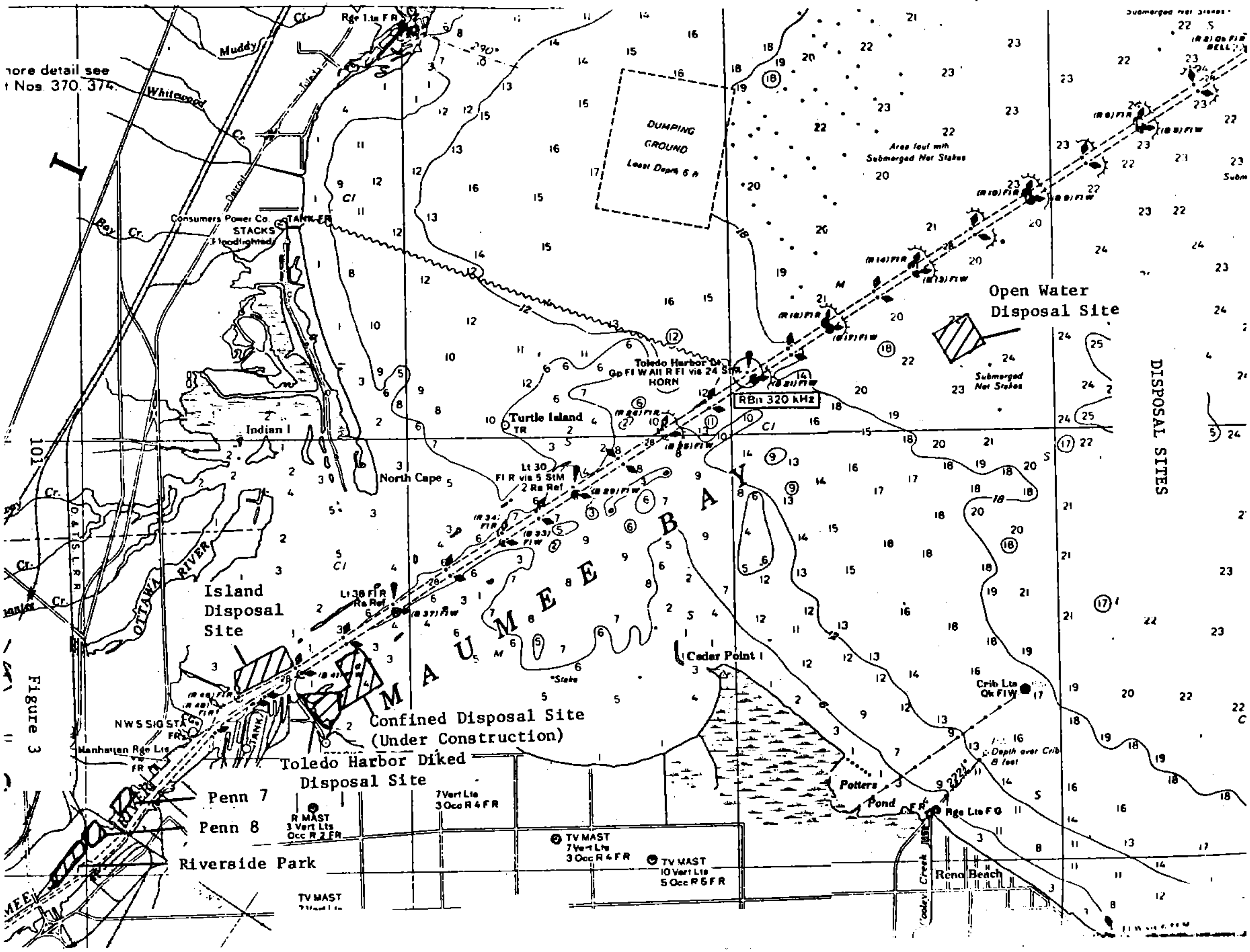


Figure 3

ISLAND DISPOSAL SITE

TOLEDO HARBOR

(1" = 600')

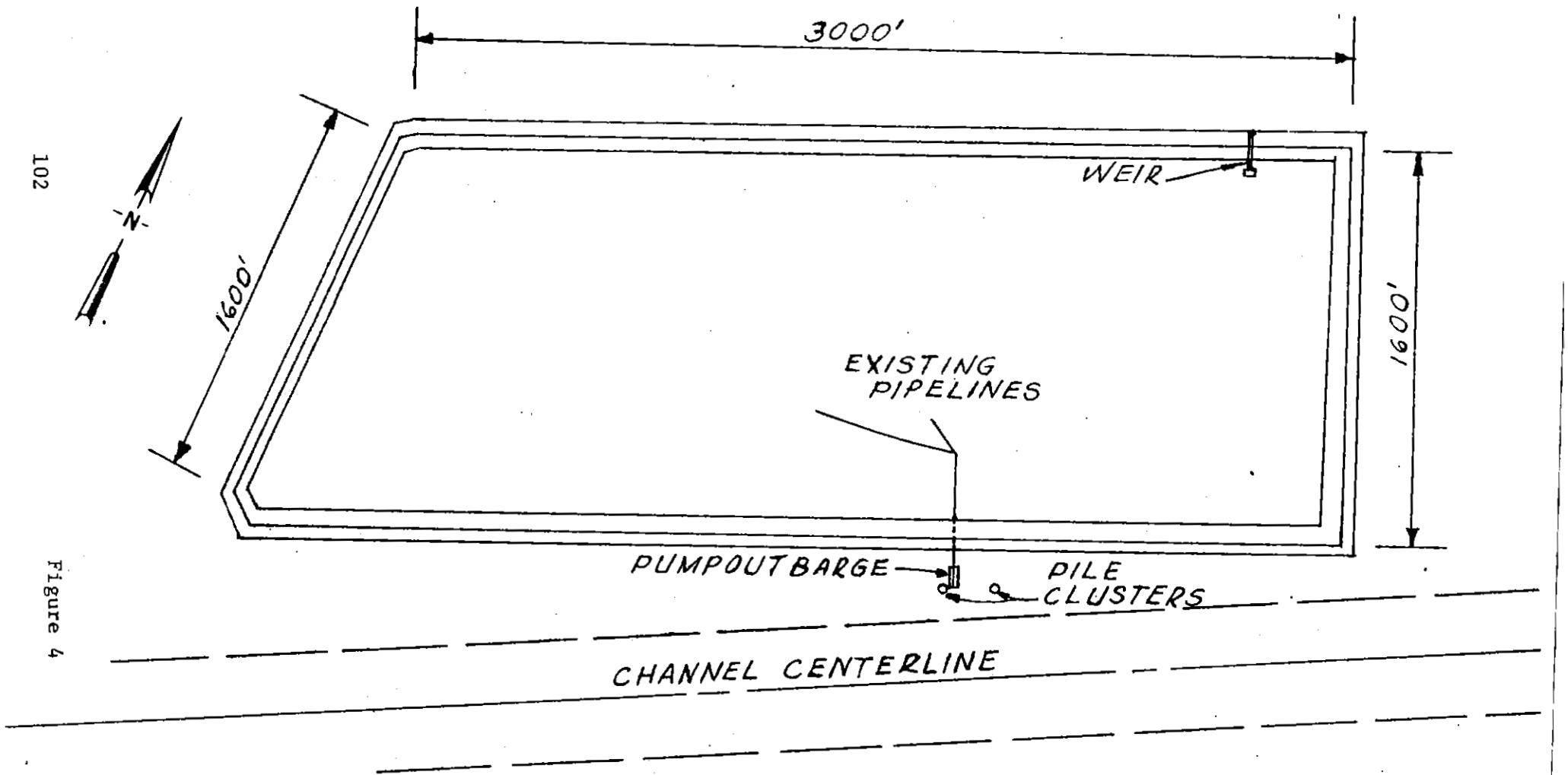


Figure 4

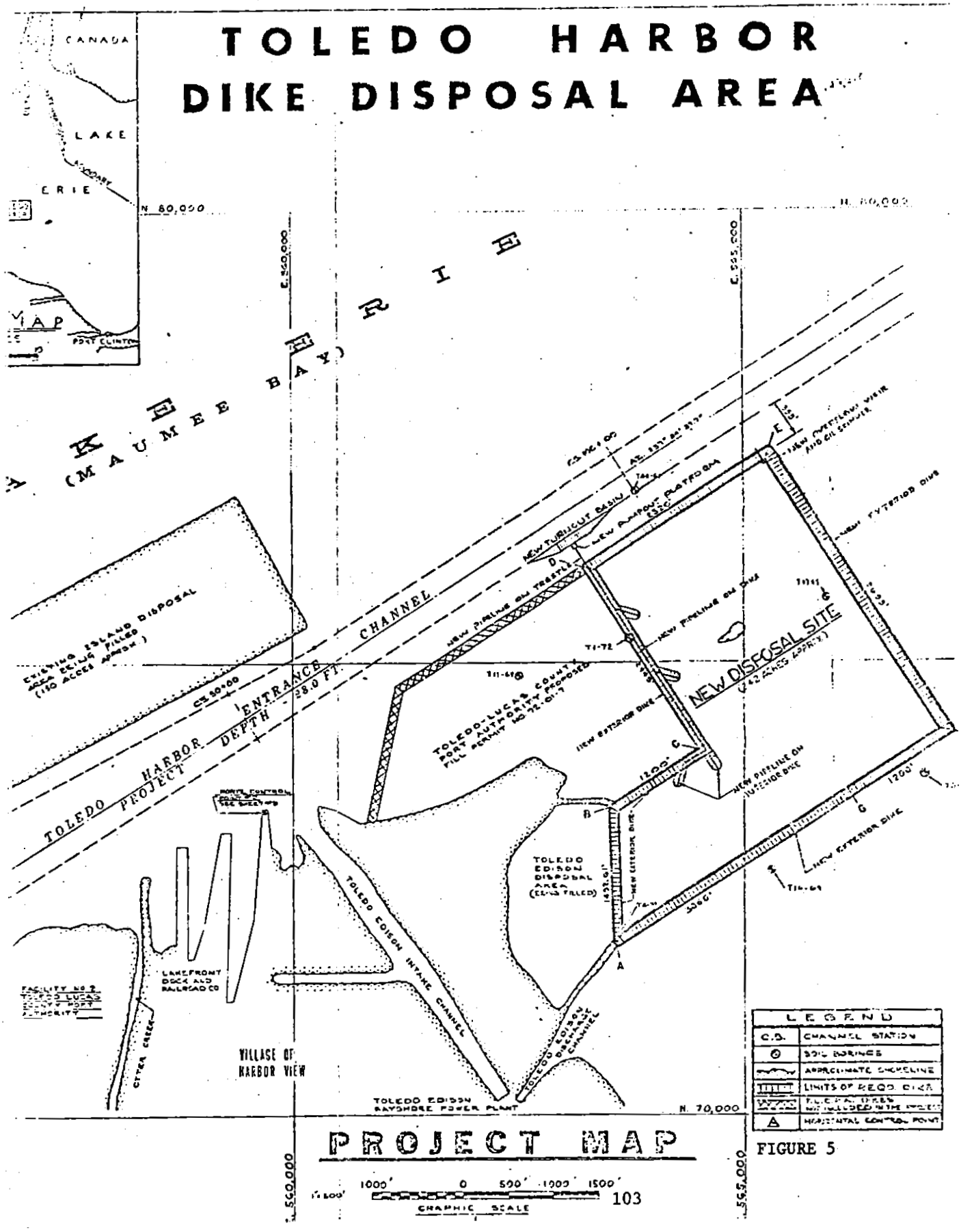
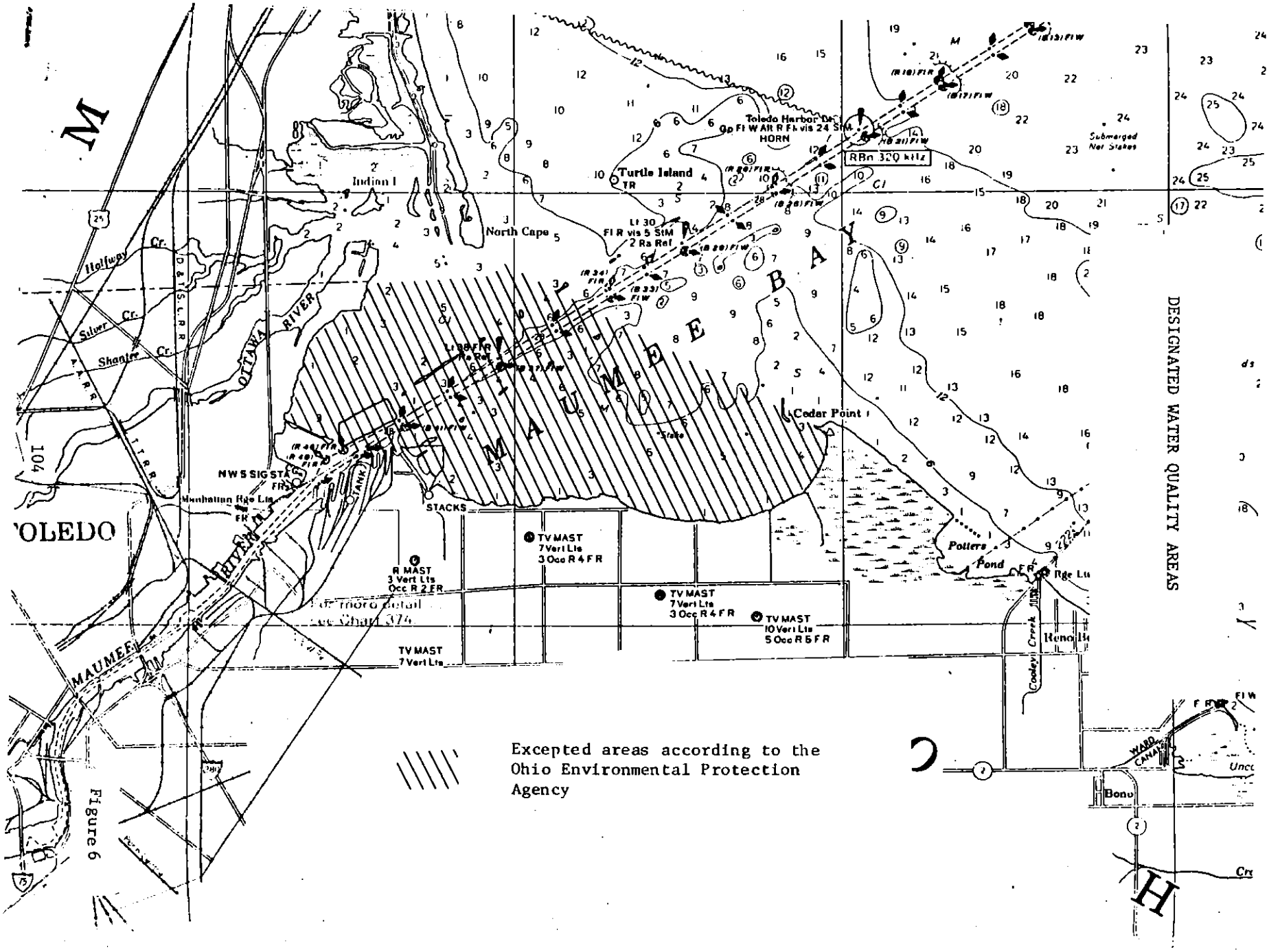

TOLEDO HARBOR
DIKE DISPOSAL AREA
CANADA
LAKE
ERIE
MAP
PORT CLINTON
N. 80,000
E. 540,000
E. 555,000
N. 70,000
E. 560,000
E. 565,000
MAUMEE BAY
TOLEDO HARBOR PROJECT DEPTH - 28.0 FT.
ENTRANCE CHANNEL
EXISTING ISLAND DISPOSAL AREA (150 ACRES FILLED)
NEW TURNOUT BASIN
NEW PUMPOUT PLATFORM
NEW PIPELINE ON TRESTLE
NEW PIPELINE ON DIKE
NEW OVERFLOW WEIR AND OIL SKIMMER
NEW EXTERIOR DIKE
NEW DISPOSAL SITE
(242 ACRES APPROX.)
TOLEDO-LUCAS COUNTY PORT AUTHORITY PROPOSED FILL PERMIT NO 72-01-7
TOLEDO EDISON DISPOSAL AREA (ESTIMATED FILLED)
TOLEDO EDISON INTAKE CHANNEL
TOLEDO EDISON DISCHARGE CHANNEL
LAKEFRONT DOCK AND RAILROAD CO
CITY CREEK
VILLAGE OF HARBOR VIEW
TOLEDO EDISON BAYSHORE POWER PLANT
1200'
3300'
1433.61'
LEGEND
C.S. CHANNEL STATION
SOIL BORINGS
APPROXIMATE SHORELINE
LIMITS OF REDD DIKE
F.E.P.A. AREA NOT INCLUDED IN THE PROJECT
HORIZONTAL CONTROL POINT
PROJECT MAP
1000' 0 500' 1000' 1500'
GRAPHIC SCALE

FIGURE 5


DESIGNATED WATER QUALITY AREAS
Excepted areas according to the Ohio Environmental Protection Agency
Turtle Island
North Cape
Cedar Point
Potters Pond
Toledo Harbor Dc
RBn 320 kHz
Indian I
Halfway Cr.
Silver Cr.
Shanty Cr.
OTTAWA RIVER
MAUMEE BAY
MAUMEE RIVER
TOLEDO
NWS SIG STA
Manhattan Rge Lts
STACKS
R MAST
3 Vert Lts
Occ R 2 FR
TV MAST
7 Vert Lts
3 Occ R 4 FR
TV MAST
10 Vert Lts
5 Occ R 5 FR
TV MAST
7 Vert Lts
Reno
Bono
WARD CANAL
Cr
Figure 6

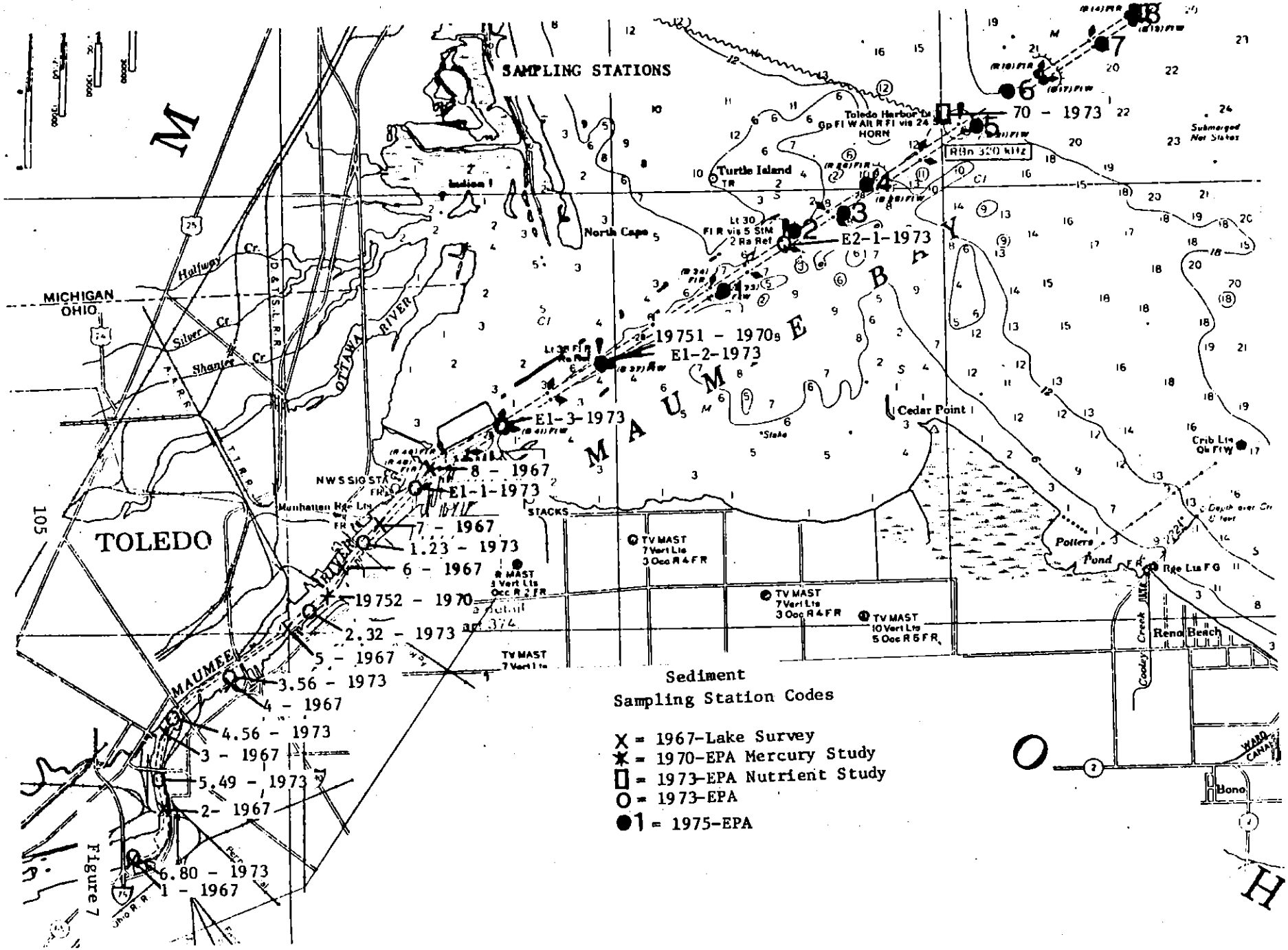

SAMPLING STATIONS
70 - 1973
E2-1-1973
19751 - 1970s
E1-2-1973
E1-3-1973
8 - 1967
E1-1-1973
7 - 1967
1.23 - 1973
6 - 1967
19752 - 1970
2.32 - 1973
5 - 1967
3.56 - 1973
4 - 1967
4.56 - 1973
3 - 1967
5.49 - 1973
2- 1967
6.80 - 1973
1 - 1967
TOLEDO
MICHIGAN
OHIO
Turtle Island
North Cape
Cedar Point
Maumee Bay
Sediment
Sampling Station Codes
X = 1967-Lake Survey
✱ = 1970-EPA Mercury Study
□ = 1973-EPA Nutrient Study
O = 1973-EPA
●1 = 1975-EPA

Figure 7

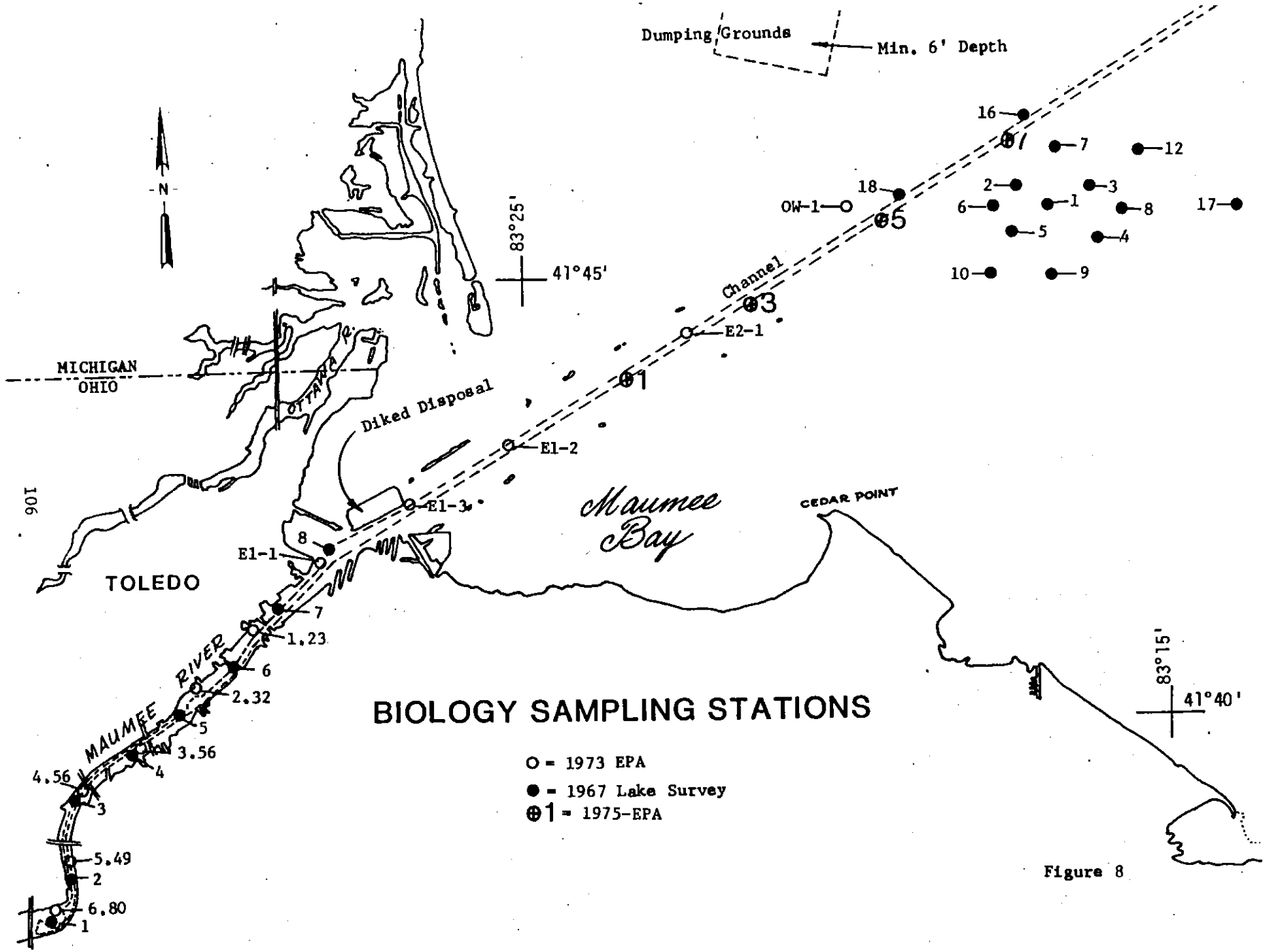
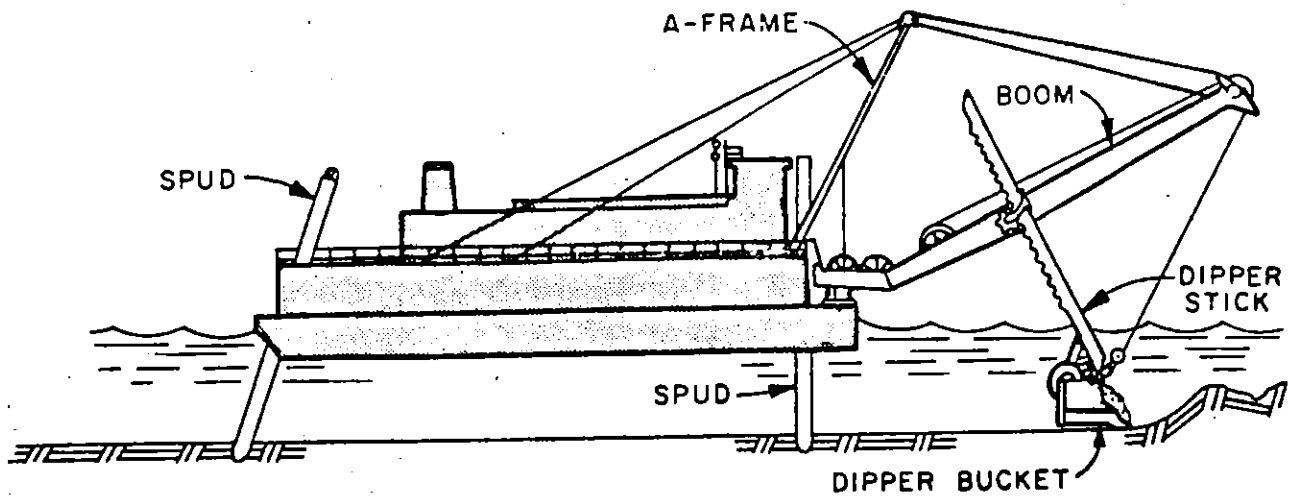
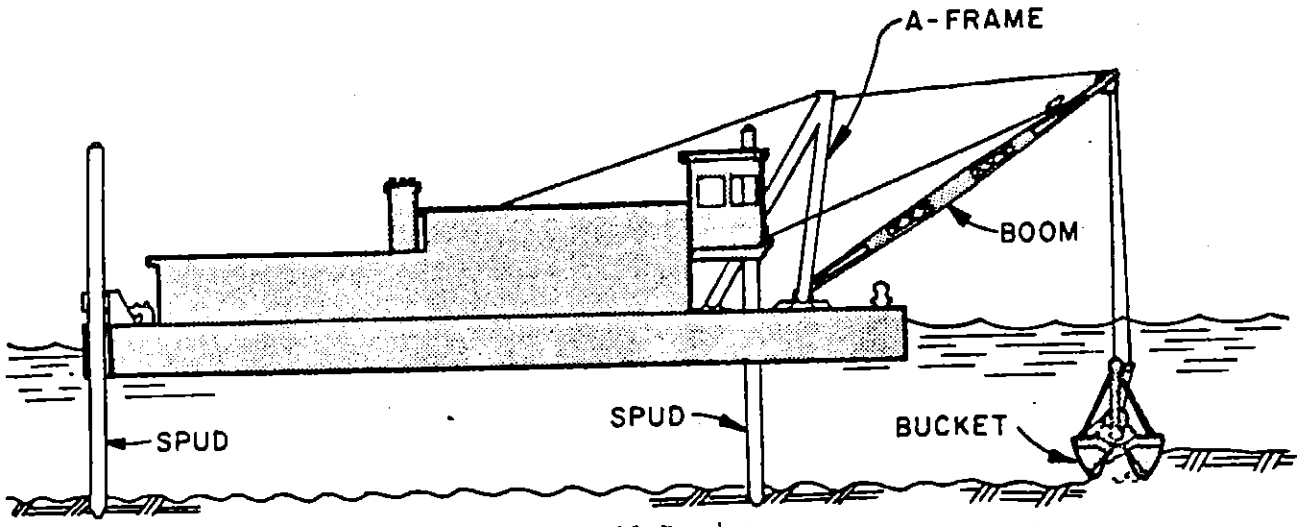

Dumping Grounds
Min. 6' Depth
16
7
12
18
2
3
OW-1
6
1
8
17
5
4
10
9
83°25'
41°45'
Channel
E2-1
MICHIGAN
OHIO
Diked Disposal
E1-2
E1-3
Maumee Bay
CEDAR POINT
E1-1
8
TOLEDO
7
1,23
6
2.32
5
3.56
4
4.56
3
5.49
2
6.80
1
MAUMEE RIVER
83°15'
41°40'
BIOLOGY SAMPLING STATIONS
O = 1973 EPA
● = 1967 Lake Survey
⊕1 = 1975-EPA

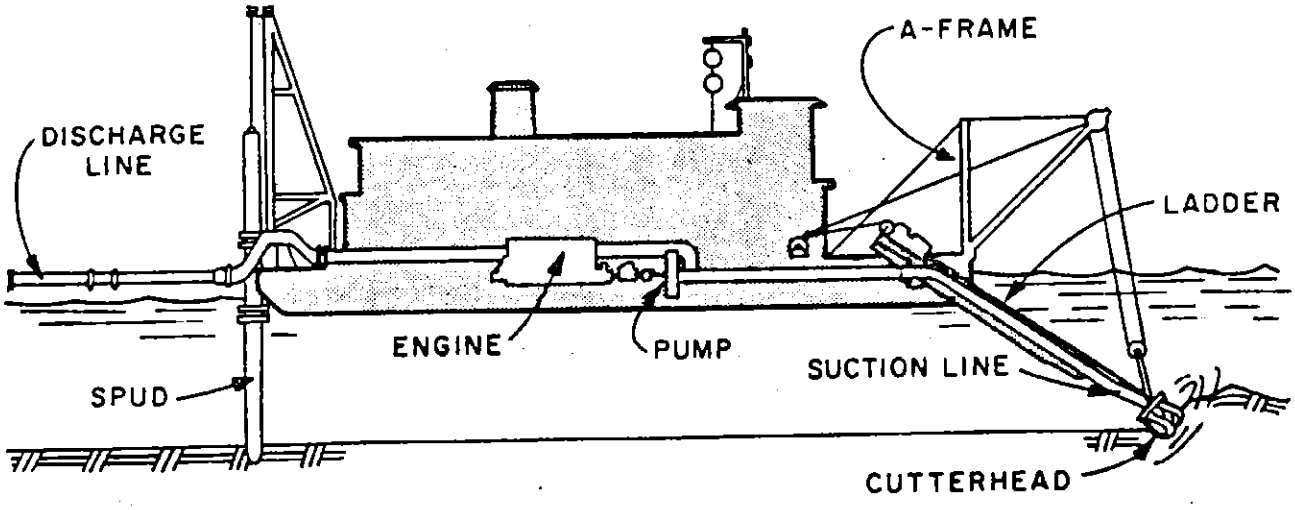
Figure 8



Dipper Dredge



Clamshell Dredge



Pipeline Dredge

Figure 9

MAINTENANCE DREDGING OF THE

FEDERAL NAVIGATION CHANNEL AT

TOLEDO HARBOR, OHIO

APPENDIX A

OHIO EPA
WATER QUALITY STANDARDS

APPENDIX A

OHIO EPA WATER QUALITY STANDARDS

General Standard

Except as other regulations in this Chapter, EP-1, establish different standards, the water quality standards of the state shall be as follows:

(A) Within 500 years of any public water supply intake,

(1) dissolved solids may exceed one, but not both, of the following:

(a) 500 mg/l as a monthly average nor exceed 750 mg/l at any time, or

(b) 150 mg/l of dissolved solids attributable to human activities; and

(2) phenols (storet number 32730) shall not exceed 1.0 ug/l; and

(3) nitrate (N) (storet number 00620) shall not exceed 8 mg/l; and

(4) dissolved iron (storet number 01046) shall not exceed 300 ug/l; and

(5) chromium (hexavalent) (storet number 01032) shall not exceed 10 mg/l; and

(6) cyanide (storet number 00720) shall not exceed .005 mg/l; and

(7) dissolved manganese (storet number 01056) shall not exceed 50 ug/l.

(B) Within 500 yards of any water supply intake, dissolved solids may exceed one, but not both, of the following:

(1) 500 mg/l as a monthly average nor exceed 750 mg/l at any time, or

(2) 150 mg/l of dissolved solids attributable to human activities; and

(C) Dissolved oxygen shall not be less than a daily average of 5.0 mg/l nor less than 4.0 mg/l at any time.

(D) pH shall not be less than 6.0 and shall not be more than 9.0 at any time except that it may be less than 6.0 or more than 9.0 if there is no contribution of acidic or alkaline pollution attributable to human activities.

(E) (1) Geometric mean fecal coliform content (either MPN or MF count), based on not less than five samples within a 30-day period, shall not exceed 200 per 100 ml.

(2) Fecal coliform content (either MPN or MF count) shall not exceed 400 per/100 ml in more than ten percent of the samples taken during any 30 day period.

(F) Dissolved solids may exceed one, but not both of the following:

(1) 1500 mg/l

(2) 150 mg/l attributable to human activities.

(G) Lake or reservoir water temperature shall not exceed by more than three degrees fahrenheit (1.7 degrees centigrade) the water temperature which would occur if there were no temperature change of such waters attributable to human activities, and stream water temperature shall not exceed by more than five degrees fahrenheit (2.8 degrees centigrade) the water temperature which would occur if there were no temperature change of such waters attributable to human activities. In addition, at no time shall water temperature exceed the maximum temperatures indicated in the following table:

MAXIMUM TEMPERATURE IN DEGREES CENTIGRADE & FAHRENHEIT DURING MONTH

Water		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
All Waters Except Ohio River	C°	10.0	10.0	15.6	21.1	26.7	32.2	32.2	32.2	32.2	25.6	21.1	13.9
	F°	50	50	60	70	80	90	90	90	90	78	70	57
Main Stem Ohio River	C°	10.0	10.0	15.6	21.1	26.7	30.6	31.7	31.7	30.6	25.6	21.1	13.9
	F°	50	50	60	70	80	87	89	89	87	78	70	57

(H) The threshold-odor number attributable to human activities shall not exceed 24 at 40 degrees centigrade tested as described in "Standard Methods for the Examination of Water and Wastewater," 13th Edition, 1971, published by the American Public Health Association, the American Water Works Association, and Water Pollution Control Federation.

(I) Gross beta activity shall not exceed 100 picocuries per liter, nor shall activity from strontium 90 exceed 10 picocuries per liter, nor shall activity from alpha emitters exceed 3 picocuries per liter.

(J) The following chemical pollutants shall not exceed the following specified concentrations at any time:

Storet Number	Constituent*	Concentration mg/l	Concentration ug/l
00610	Ammonia	1.5	-
01002	Arsenic	-	50.
01007	Barium	-	800.
01027	Cadmium	-	5.
00940	Chloride	250.	-
01034	Chromium	-	300.
01032	Chromium (hexavalent)	-	50.
00722	Cyanide (free)	0.005	-
00720	Cyanide	0.2	-
00951	Fluoride	1.3	-
38260	Foaming Agents (MBAS)	0.5	-
01046	Iron (dissolved)	-	1000.
01051	Lead	-	40.
01056	Manganese (dissolved)	-	1000.
71900	Mercury	-	.5
00550	Oil & Grease (hexane soluble)	5.	-
32730	Phenols	-	10.
01147	Selenium	-	5.
01077	Silver	-	1.

*Total unless otherwise indicated.

(K) Total copper (storet number 01042) shall not exceed the following specified concentrations at any time:

Hardness as mg/l of $CaCO_3$ -	0-80	80-160	160-240	240-320	above 320
Concentration in ug/l -	5	10	20	50	75

(L) Total zinc (storet number 01092) shall not exceed the following specified concentrations at any time:

Hardness as mg/l of $CaCO_3$ -	0-80	80-160	160-240	240-320	above 320
Concentration in ug/l -	75	100	200	400	500

(M) (1) For Lake Erie and all waters tributary to Lake Erie, discharges of total phosphorous as P (storet number 00665) from point sources determined significant by the Ohio EPA shall not exceed a daily average of 1 mg/l as total P, or such stricter requirements as may be imposed by Ohio EPA NPDES permits.

(2) For the Ohio River and all waters tributary to the Ohio River, total phosphorus as P shall be limited to the extent necessary to prevent nuisance growths of algae, weeds, and slimes that result in a violation of the water quality standards set forth in this Chapter, EP-1. In areas where such nuisance growths exist, phosphorus discharges from point sources determined sginificant by the Ohio Environmental Protection Agency shall not exceed a daily average of one milligram per liter as total P, or such stricter requirements as may be imposed by Ohio EPA NPDES permits.

(N) All pollutants or combinations of pollutants shall not exceed at any time one-tenth of the 96 hour median tolerance limit for any indigenous aquatic species, except that other more stringent application factors shall be imposed where necessary to meet the minimum requirements of the National Technical Advisory Committee, "Water Quality Criteria," 1968. The median tolerance limit shall be determined by static or dynamic bioassays in accordance with standard methods described in "Standard Methods for the Examination of Water and Wastewater," 13th Edition, 1971, published by the American Public Health Association, and Water Pollution Control Federation.

(O) All waters of the state shall be free from substances attributable to human activities which result in sludge deposits, floating materials, color, turbidity, or other conditions in such degree as to create a nuisance.

EP-1-07 Lake Erie.

(A) Water Quality Standards.

The water quality standards in Lake Erie [outside of the excepted areas established in subsection (b)(2) below] shall be the water quality standards set forth in EP-1-02, except that, to the extent that the following paragraphs establish different standards, the latter standards shall apply:

(1) Dissolved oxygen in the Western Basin and in the epilimnion of the Central Basin shall not be less than 6.0 mg/l, or 80% of saturation, whichever is greater. Dissolved oxygen in the hypolimnion of the off-shore area of the Central Basin shall not be less than 80% of saturation except between June 1 and October 15, during which period neither the foregoing standard nor any other dissolved oxygen standard set forth in this chapter, EP-1, need be met.

(2) (a) Water temperature of the epilimnion shall not exceed by more than 3° Fahrenheit (1.7° C) the water temperature which would occur if there were no temperature change of such waters attributable to human activities. In addition, at no time shall water temperature exceed at a depth three feet below the surface the maximum temperatures indicated in the following table:

PERIOD	MAXIMUM TEMPERATURE °F	°C
January 1-31	35	1.7
February 1-28	38	3.3
March 1-15	39	3.9
16-31	45	7.2
April 1-15	53	11.7
16-30	60	15.6
May 1-15	64	17.8
16-31	72	22.2
June 1-15	78	25.6
16-30	83	28.3
July 1-31	85	29.4
August 1-31	85	29.4
September 1-30	81	27.2
October 1-31	71	21.7
November 1-30	58	14.4
December 1-31	46	7.8

(b) The temperatures of bottom waters of the off-shore area of the Western Basin shall not exceed those set forth in the following table:

PERIOD	MAXIMUM ALLOWABLE TEMPERATURE	
	°F	°C
April 1-22	42	5.6
April 23-30	46	7.8
May 1-15	53	11.7

(c) The temperature of the hypolimnetic waters of the Ohio portion of the Central Basin of Lake Erie shall not as a result of human activities exceed 60° Fahrenheit (15.6° Centigrade).

(3) Radioactivity shall not exceed the lowest practicable levels, and in any event shall not be present in amounts that may pose a health hazard. In addition, after the date of adoption of Lake Erie radioactivity criteria by the Great Lakes Water Quality Board of the International Joint Commission, those criteria shall be deemed incorporated by reference into this Chapter, EP-1.

(4) The following pollutants shall not exceed the following specified concentrations:

Lake Segment			W. Basin Near Shore	W. Basin Off Shore	Central Basin Off Shore	Central Basin Near Shore W. of Avon	Central Basin Near Shore E. of Avon
Storet Number	Constituent Heavy Metals	Units					
01002	Arsenic	ug/l	1.	1.	1.	5.	5.
01007	Barium	ug/l	1.	1.	1.	1.	1.
01027	Cadmium	ug/l	5.	0.5	0.5	5.	5.
01034	Chromium	ug/l	50.	3.	3.	50.	50.
01042	Copper	ug/l	10.	5.	5.	10.	10.
01045	Iron	ug/l	300.	300.	300.	300.	300.
01051	Lead	ug/l	50.	50.	50.	50.	50.
01055	Manganese	ug/l	50.	50.	50.	50.	50.
71900	Mercury	ug/l	0.3	0.1	0.1	0.3	0.3
01067	Nickel	ug/l	50.	50.	50.	50.	50.
01147	Selenium	ug/l	5.	1.	1.	5.	5.
01077	Silver	ug/l	1.	.2	.2	1.	1.
01092	Zinc	ug/l	50.	15.	15.	50.	50.
	Other Chemicals						
00335	COD	mg/l	15.	10.	7.	12.	15.
32005	Carbom Chloroform Extractables (CCE)	mg/l	0.05	0.05	0.05	0.05	0.05
00720	Cyanide	ug/l	.5	.5	.5	.5	.5
00950	Fluoride (Dissolved)	mg/l	0.15.	0.15.	0.15.	0.15.	0.15.
38260	Methylene Blue Active Substances (MBAS)	mg/l	0.05.	0.05.	0.05.	0.05.	0.05.
00550	Oil & Grease	mg/l	0.05.	0.05.	0.05.	0.05.	0.05.
32730	Phenols	ug/l	1.0	.5	.5	1.0	1.0
	Un-ionized Ammonia as N **	mg/l	0.02	0.02	0.02	0.02	0.02

Lake Segment			W. Basin Near Shore	W. Basin Off Shore	Central Basin Off Shore	Central Basin Near Shore W. of Avon	Central Basin Near Shore E. of Avon
Storet Number	Constituent (Total unless otherwise stated)	Units					
00515	Dissolved Solids	mg/l					
	Mo. Ave/Max. day		200/300	160/180	160/180	180/200	200/250
00940	Chlorides	mg/l					
	Mo. Ave/Max. day		25/30	25/30	25/30	25/30	35/50
00945	Sulfates	mg/l					
	Mo. Ave/Max. day		35/50	25/40	25/40	25/40	25/40
00900	Hardness	mg/l					
	Mo. Ave/Max. day		130/180	110/130	110/130	110/130	130/180
00400	pH	S.U.					
	Monthly Min/Max.		7.0-8.8	6.7-8.5	6.7-8.5	7.0-8.8	7.0-8.8
31616	Fecal Coliforms *	No. 100 ml					
	Mo. Mean/10% time						
	1. At Water Works Intake		50/100	5/10	5/10	20/50	100/200
	2. General Standard		200/400	100/200	10/50	200/400	200/400
00085	Threshold Odor No.	T.N.					
	Mo. Ave/Max.		15/25	10/15	5/10	10/15	10/15
	Nutrients						
00665	Total Phosphorus (P)	mg/l	0.025	0.025	0.015	0.025	0.025
00640	Total Inorganic Nitrogen (N)	mg/l	0.30	0.30	0.30	0.30	0.30

*Fecal Coliforms are expressed as a geometric mean per 100 ml based on not less than 10 samples per 30 day period and the values not to be exceeded in more than 10 percent of such samples.

(5) (a) Concentrations of materials that are nonpersistent (defined as materials having a half-life of less than 96 hours) and that have no cumulative effects shall not exceed the following limitations:

(i) Such concentrations shall not exceed 1/10 of the 96-hour median tolerance limit value, and

(ii) The 24-hour average of such concentrations shall not exceed 1/20 of the 96-hour median tolerance limit, and

(b) Concentrations of materials that are persistent (defined as materials having a half-life of 96 hours or more) or have cumulative effects shall not exceed the following limitations:

(i) Such concentrations shall not exceed 1/20 of the 96-hour median tolerance limit value, and

(ii) The 24-hour average of such concentrations shall not exceed 1/100 of the 96-hour median tolerance limit value, and

(c) When two or more toxic materials that have additive effects are present at the same time, their concentrations shall not be greater than those given by the formula:

$$\frac{Ca}{La} + \frac{Cb}{Lb} \ldots + \frac{Cn}{Ln} \leq 1$$

where Ca, Cb, Cn are the measured concentrations of the several toxic materials in the water and La, Lb, Ln are the respective permissible concentration limits derived for the materials on an individual basis.

(B) Segmentation of Lake Erie; Excepted Areas.

(1) Lake Erie shall be divided into five regions: the Eastern Basin, the near-shore area of the Central Basin, the off-shore area of the Central Basin, the near-shore area of the Western Basin, and the off-shore area of the Western Basin. These regions shall be as shown in figure 1 and as defined herein. The boundary between the near-shore and off-shore areas of the Western Basin shall follow the 18 foot lake contour line from the Ohio-Michigan border (all reef areas

being considered part of the off-shore area) to Scott Point on Catawba Island, then shall follow the 18 foot contour line between Catawba Island and Kelley Island to Longitude 82° 42'. The boundary between the near-shore and off-shore areas of the Central Basin shall follow the 18 foot contour line west of Avon Point and the 24 foot lake contour line east of Avon Point. All contour lines shall be those referring to depth below water datum [mean water level at Father Point, Quebec (International Great Lakes Datum-1955), which is 568.6 feet above mean sea level].

(2) The areas illustrated in the Appendix shall be designated as excepted areas, and the water quality standards therein shall be those that would apply if this regulation, EP-1-07, did not exist.

(Former Regulation EP-1-05, adopted July 27, 1973, effective July 27, 1973, is repealed.)

(Adopted January 8, 1975; effective January 8, 1975)

MAINTENANCE DREDGING OF THE

FEDERAL NAVIGATION CHANNEL AT

TOLEDO HARBOR, OHIO

APPENDIX B

STATE OF OHIO
STANDARDS FOR AQUATIC LIFE
(WARM WATER FISHERY)

APPENDIX B

OHIO EPA

FOR AQUATIC LIFE (WARM WATER FISHERY)

The following criteria are for evaluation of conditions for the maintenance of a well-balanced, warm-water fish population. They are applicable at any point in the stream except for the minimum area necessary for the admixture of waste effluents with stream water:

1. Dissolved oxygen: Not less than an average of 5.0 mg/l per calendar day and not less than 4.0 mg/l at any time.

2. pH:

   A. No values below 6.0 nor above 8.5.

   B. Daily fluctuations which exceed the range of pH 6.0 to pH 8.5 and are correlated with photosynthetic activity may be tolerated.

3. Temperature

   A. No abnormal temperature changes that may affect aquatic life unless caused by natural conditions.

   B. For the main stem of the Mahoning River (Warren to Lowellville Dam) water temperatures shall not exceed natural levels (as measured by the water quality monitor station at Leavittsburg) by 5° F. during April through November and 10° December through March.

   C. For all waters except the main stem of the Mahoning River (Warren to Lowellville Dam) the maximum temperature shall not exceed natural temperatures by more than 5° F. provided that at no time shall they exceed those indicated in the following table:

Maximum Temperature in Deg. F. During Month

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
50	50	60	70	80	90	90	90	90	78	70	57

4. Toxic substances: Not to exceed one-tenth of the 96-hour median tolerance limit, except that other limiting concentrations may be used in specific cases when justified on the basis of available evidence and approved by the appropriate regulatory agency.

MAINTENANCE DREDGING OF THE

FEDERAL NAVIGATION CHANNEL AT

TOLEDO HARBOR, OHIO

APPENDIX C

CORRESPONDENCE RECEIVED IN RESPONSE TO
THE DRAFT ENVIRONMENTAL STATEMENT

Advisory Council
On Historic Preservation
[illegible]
Washington [illegible]

March 4, 1975

Mr. P. McCallister
Chief, Engineering Division
Detroit District
Department of the Army
Corps of Engineers
P.O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

This is in response to your request of December 27, 1974, for comments on the environmental statement for the Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Ohio. Pursuant to its responsibilities under Section 102 (2) (C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that your draft environmental statement is inadequate regarding our area of expertise as it does not contain sufficient information to enable the Council to comment substantively. Please furnish additional data indicating:

a. Compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470(f)). The Council must have evidence that the most recent listing of the National Register of Historic Places has been consulted (see Federal Register, February 4, 1975 and monthly supplements each first Tuesday thereafter) and that either of the following conditions is satisfied:

   1. If no National Register property is affected by the project, a section detailing this determination must appear in the environmental statement.

   2. If a National Register property is affected by the project, the environmental statement must contain an account of steps taken in compliance with Section 106 and a comprehensive discussion of the contemplated effects or the National Register property. "Procedures for the Protection of Historic and Cultural Properties" are detailed in the Federal Register of January 25, 1974, pp. 3366-3370.

b. Compliance with Executive Order 11593 of May 13, 1971.

In the case of lands not under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-federally owned districts, sites, buildings, structures, and objects of historical, archeological, architectural, or cultural significance.

To insure a comprehensive review of historical, cultural, archeological, and architectural resources, the Advisory Council suggests that the environmental statement contain evidence of contact with the appropriate State Historic Preservation Officer and that a copy of his comments concerning the effects of the undertaking upon these resources be included in the environmental statement. The State Historic Preservation Officer for Ohio is Mr. Charles C. Pratt, Acting Director, The Ohio Historical Society, Interstate # 71 at 17th Avenue, Columbus, Ohio 43211.

Should you have any questions or require any additional assistance, please contact Stephen Cochran of the Advisory Council staff at 202-254-3380.

Sincerely yours,

John D. McDermott
Director, Office of Review
and Compliance

FEDERAL POWER COMMISSION
REGIONAL OFFICE
31st Floor, Federal Building
230 South Dearborn Street
Chicago, Illinois 60604

January 14, 1975

Colonel James E. Hays
District Engineer
U. S. Army Engineer District, Detroit
P. O. Box 1027
Detroit, Michigan 48231

Attention: Environmental Resources Branch

Dear Colonel Hays:

We have reviewed the Draft Environmental Statement transmitted with a letter dated December 27 from Mr. P. McCallister, Chief, Engineering Division, covering Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Ohio.

Comments of this office are made in accordance with the National Environmental Act of 1969 and the August 1, 1973 Guidelines of the Council on Environmental Quality. Our principal concern with developments affecting land and water resources is the possible effect of such developments on bulk and electric power facilities including potential hydroelectric developments and on natural gas pipeline facilities.

Since the above noted proposed project apparently would pose no major obstacle to the construction and operation of such facilities, we have no comments on the Draft EIS.

The foregoing statements are of this office and therefore do not necessarily represent the views of the Federal Power Commission.

Thank you for the opportunity to comment on the Draft Environmental Statement.

Sincerely yours,

Lenard B. Young
Regional Engineer

By Neil E. Blackstad
Acting

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NORTHEASTERN AREA, STATE AND PRIVATE FORESTRY
6816 MARKET STREET, UPPER DARBY, PA. 19082
TELEPHONE (215) XXXXXXX 597-3772

8400
January 3, 1974

U. S. Army Engineer District, Detroit
Attn: Chief, Environmental Resources Branch
P.O. Box 1027
Detroit, Michigan 48231

Re: NCEED-ER - Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan

Dear Sir:

We have reviewed the draft environmental statement "Maintenance Dredging of Polluted Sediments in Toledo Harbor, Michigan," and have the following comments for your consideration.

It is not clear whether this statement is intended as a "programmatic" statement that would not be repeated annually, or whether it is meant to cover only FY 1974 dredging. Programmatic statements for activities that recur annually are, in our view, desirable with annual addenda prepared to give the where and when but not to repeat the environmental impacts, alternatives, etc., unless there is new knowledge to impart that was not covered in the programmatic statement.

There has not been an attempt to weigh the benefits of annual dredging against the costs. This analysis becomes particularly important in light of the steady decline in tonnage from and into the harbor.

We appreciate the opportunity to review this draft statement and hope our comments will be of help in preparing the final.

Sincerely,

ALFRED H. TROUTT
Assistant Director
Environmental Protection & Improvement

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

February 28, 1975

Mr. P. McCallister
Chief, Engineering Division - Detroit District
Corps of Engineers
U. S. Department of the Army
P. O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

The draft environmental impact statement "Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan," which accompanied your letter of December 27, 1974, has been received by the Department of Commerce for review and comment.

The statement has been reviewed and the following comments are offered for your consideration.

GENERAL COMMENTS

The draft environmental impact statement incompletely describes the environmental setting of the project area, specifically with regard to aquatic resources. The environmental impact statement should discuss in detail the aquatic resources of Maumee Bay, the Maumee River, and the proposed open lake disposal site. The following agencies and individuals could be contacted to obtain data on the project area:

Dr. Peter Fraleigh
Biology Department
University of Toledo
Toledo, Ohio 43606 - Tel. (419) 537-2125

Mr. Harry D. Van Meter
Fish and Wildlife Service
2022 Cleveland Road
Sandusky, Ohio 44870 - Tel. (419) 625-1976

Mr. Russel Scholl
Ohio Department of Natural Resources
Lake Erie Fisheries Research Unit
Sandusky, Ohio 44870 - Tel. (419) 625-8062

In addition to the above-named individuals, a list of publications has been appended which should provide needed additional data.

SPECIFIC COMMENTS

SUMMARY

3. (b) ADVERSE ENVIRONMENTAL EFFECTS

Page i. Although organisms which will be removed as a result of dredging may be pollution tolerant, those found in the areas classified as clean may not be pollution tolerant. Therefore, this section should indicate that benthic organisms will be disturbed and removed throughout the project area.

1. PROJECT DESCRIPTION

1.5 DESCRIPTION OF DREDGING OPERATIONS

Page 4, paragraph 1. We suggest that the proposed open lake disposal area be depicted on a map.

2. ENVIRONMENTAL SETTING WITHOUT THE PROJECT

Page 6. This section should describe the open lake disposal area as well as the area in the immediate vicinity of the navigational project.

2.7 SEDIMENT

A discussion of the ongoing Maumee Level B Study being conducted by the Great Lakes Basin Commission, and a discussion of the effect this study may have on future sediment loading, dredging requirements, and acceptable disposal sites should be included in this section.

2.8 BIOLOGICAL ACTIVITY

Page 15, paragraph 2. The location of the biological activity discussed should be noted. As previously stated, a description of the biological activity in the area of the open lake disposal site should be included.

Actual biological data on benthic organisms (distribution and abundance) present in the project area should be included.

2.10 FISH

Page 15. As recommended in the general comments, these appropriate individuals should be contacted, and the listed articles should be utilized to obtain data needed for a thorough evaluation of the project's impacts on fish. Commercial fishing data to complement that given in Table 1 is attached for use in the final environmental impact statement.

In reference to Table 1, an explanation should be given for presenting a range of tonnages for a single year.

4. PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT

4.1 GENERAL POSITIVE AND BENEFICIAL IMPACTS

Page 15, paragraph 5. The conclusion that the removal of polluted sediments will improve bottom habitats of the dredged areas seems premature. Any improvements in the benthic habitat will depend on the substrate exposed and the rate at which polluted sediments are redeposited in the area. The apparently conflicting statements in this section and in Section 4.2 DREDGING IMPACTS (page 17, paragraph 1) should be reconciled.

4.2 DREDGING IMPACTS

Page 17, paragraph 5. The area over which turbidity and siltation are to occur should be described and the impacts discussed. Any effects that siltation may have on fish spawning areas should also be determined and described. Finally, any adverse effects that may result from resuspending pollutants that could interact with the chemical or thermal plumes from the Toledo Edison power plants located in the area should be discussed.

Page 18, paragraph 1. The source of the data on percent oxygen reduction resulting from resuspended organics should be cited.

4.3 DISPOSAL IMPACTS

Page 18, paragraph 3. This section should also include a discussion of the impacts associated with open lake disposal of the clean spoil (approximately 275,600 cubic yards).

5. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Page 19, paragraph 2. Although benthic organisms will recolonize the area following dredging, the species diversity could be reduced. As a result of periodic (annual) dredging, the species composition of the area may never reach a true balance, and maximum sustained population density may never be achieved.

6. ALTERNATIVES TO THE PROPOSED ACTION

Page 19. The discussion of each of the alternatives and its impacts should be expanded to support the conclusive statements presented.

7. RELATIONSHIP BETWEEN SHORT-TERM USE OF MAN'S ENVIRONMENT MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

7.1 SHORT-TERM

Page 20. This section should also include a discussion of the short-term ecological effects of the project.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving a copy of the final statement.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Attachments

REFERENCES

Bowman, E.W. 1974
Lake Erie Bottom Trawl Explorations, 1962-66. NOAA Tech. Rep. NMFS SSRF-674.

Federal Water Pollution Control Administration. 1968.
Lake Erie Environmental Summary, 1963-64. USDI, FWPCA, Great Lakes Region.

Federal Water Pollution Control Administration. 1968.
Lake Erie surveillance data summary, 1967-1968. USDI, FWPCA, Great Lakes Region.

Great Lakes Fishery Commission. 1961.
Fishery statistical districts of the Great Lakes. Tech. Rep. No. 2.

Hiltunen, J. 1969.
Distribution of oligochaetes in western Lake Erie, 1961. Limnol. Oceanogr. 14(2):260-264.

Hartman, W.L. 1970.
Summary statement on Lake Erie. U.S. Bur. Com. Fish. USDI, presented at The Lake Erie Enforcement Conference, Cobo Hall, Detroit, MI, June 3, 1970.

Hartman, W.L. 1973.
Effects of exploitation, environmental changes, and new species on the fish habitats and resources of Lake Erie. Great Lakes Fish. Comm., Tech. Rep. No. 22.

Van Meter, H.D. 1973.
Unharvested fishes in the U.S. commercial fishery of western Lake Erie in 1969. NOAA Tech. Rep. NMFS SSRF-670.

Van Meter, H.D., and M. B. Trautman. 1970.
An annotated list of the fishes of Lake Erie and its tributary waters exclusive of the Detroit River. Ohio J. of Sci. 70(2):65.

Commercial Fishery Landings, Port of Toledo

Year	Pounds
1968	1,610,498
1969	1,865,968
1970	1,975,146

SPECIES PRODUCTION BY MONTH IN DISTRICT OH 1 1971

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
BUFFALOFISH	0.	0.	2069.	2454.	395.	20.	142.	5.	398.	837.	308.	0.	6628.
BULLHEADS	0.	0.	278.	4112.	2061.	0.	1008.	654.	1386.	3340.	1911.	0.	14750.
CARP	0.	0.	423453.	451442.	330838.	413007.	254195.	172442.	54231.	45835.	50890.	39405.	2235738.
CATFISH	0.	0.	1489.	111689.	81028.	66348.	21221.	15929.	12175.	15107.	62801.	35975.	423762.
GOLDFISH	0.	0.	740.	0.	8.	1.	2005.	0.	0.	0.	0.	0.	2754.
QUILLBACK	0.	0.	4982.	11733.	1486.	125.	0.	310.	1784.	4507.	2304.	413.	27644.
SHEEPSHEAD	0.	0.	8113.	104312.	37341.	10898.	15658.	5602.	13948.	21809.	19505.	8092.	245278.
SMELT HUMAN FOOD	0.	0.	100.	265.	130.	0.	0.	0.	0.	0.	0.	0.	495.
SUCKERS	0.	0.	18122.	31072.	4437.	520.	578.	1420.	1298.	3098.	4832.	2023.	67400.
WHITE BASS	0.	0.	25530.	375342.	275410.	2.	0.	0.	0.	0.	0.	0.	676285.
YELLOW PERCH	0.	0.	49040.	357132.	49174.	4756.	46958.	33893.	19904.	44097.	69148.	17664.	691766.
	0.	0.	533916.	1449554.	782308.	495677.	341765.	230255.	105124.	138630.	211699.	103572.	4392500.

IES PRODUCTION IN POUNDS BY MONTH FOR 1972

E : OHIO LAKE : ERIE DISTRICT : 1

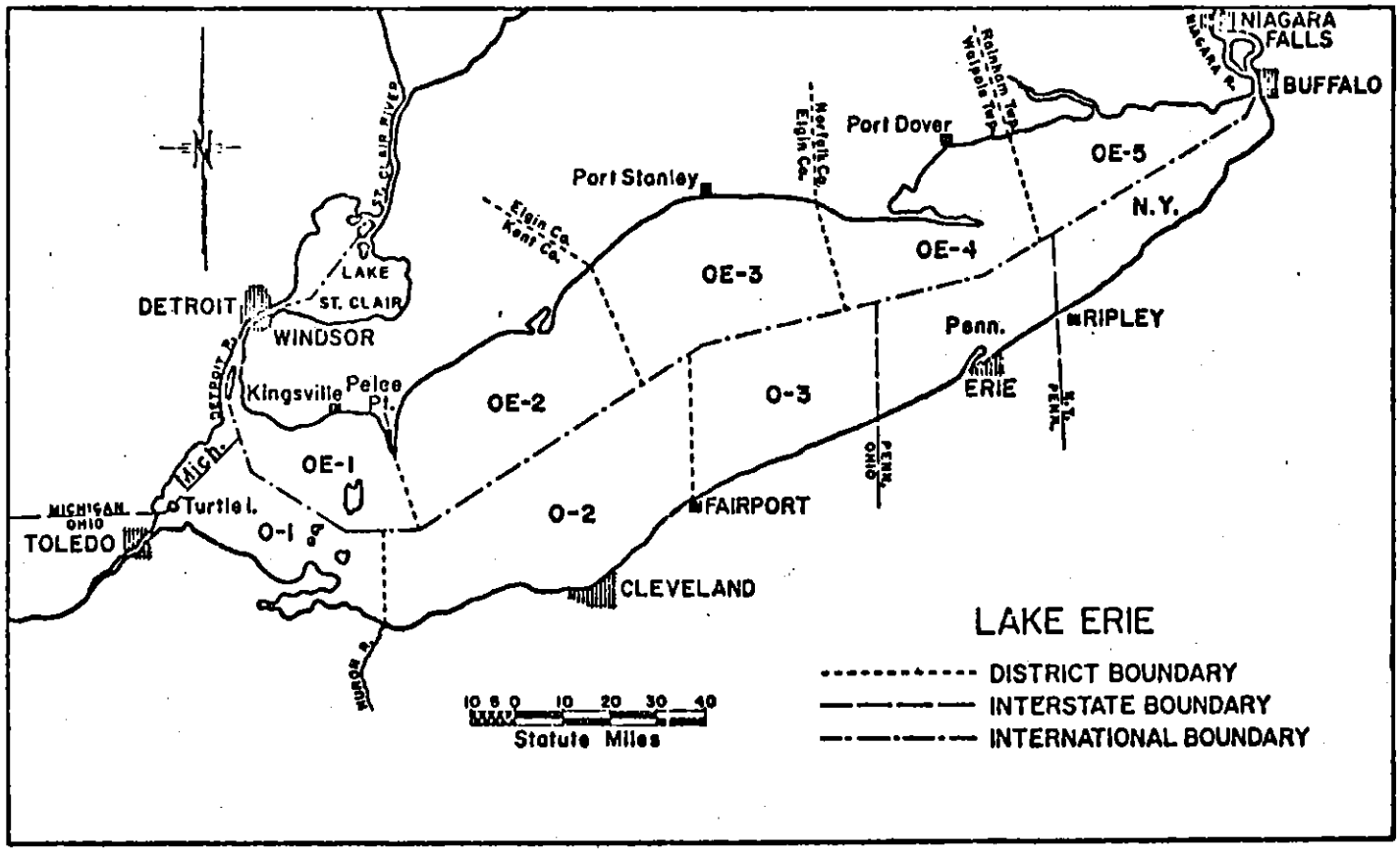
SPECIES	JANUARY	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT.	OCTOBER	NOV.	DEC.	TOTALS
LLOFISH----------	0	0	1238	2124	1087	1068	2013	1134	287	2509	940	8	12408
EADS----------	0	0	269	3310	1111	884	1443	5477	942	3293	1077	0	17806
----------	0	0	416014	360492	189206	447776	357742	100279	14125	24783	144198	16222	2070837
ISH----------	0	0	2140	138835	91994	41691	52052	14839	5928	21934	94801	14107	478321
' ISH----------	0	0	40	1800	6000	0	0	455	0	0	0	0	8295
BACK----------	0	0	1877	8364	4947	6823	731	3605	4937	6799	4126	426	42635
'SHEAD----------	0	0	4424	82803	65952	80522	85973	18616	6283	16418	19018	5482	385491
ERS----------	0	0	12468	18357	7545	1365	2950	2005	1502	6651	8271	866	61980
E BASS----------	0	0	3487	127494	150655	86874	74395	6440	6950	36211	30346	3275	526167
W PERCH----------	0	0	32393	153445	19912	2630	23913	23823	13257	46556	81204	4428	401611
TOTALS----------	0	0	474350	897024	538409	669633	601212	176673	54291	165154	383981	44824	4005551

SPECIES PRODUCTION IN POUNDS BY MONTH FOR 1973

STATE OF OHIO - LAKE ERIE DISTRICT 1

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
BUFFALOFISH	0	0	409	1336	1553	433	317	199	807	1743	660	23	7480
BULLHEADS	0	0	189	279	44	7	75	894	1870	5354	1681	13	10406
CARP	0	0	175764	213907	234300	385251	175509	119291	29310	29799	11277	3355	1377763
CATFISH	0	0	3119	41608	19871	29123	14193	6785	4102	8105	22531	6613	156050
GOLDFISH	0	0	0	0	2500	2420	1300	0	0	0	0	0	6220
QUILLBACK	0	0	2444	10075	11043	4348	2396	310	2144	7300	2375	442	42877
SHEEPSHEAD	0	0	27583	158417	90973	18752	44753	10560	7502	18158	9686	9776	396160
SUCKERS	0	0	6922	9644	6989	1174	3718	1202	1680	6130	2080	401	39940
WALLEYE	0	0	815	0	0	0	0	0	0	0	0	0	815
WHITE BASS	0	0	40312	214793	322050	321473	45593	24223	59722	203632	30292	4371	1266461
YELLOW PERCH	0	0	31086	88235	24226	4884	8465	11690	11284	24130	17230	4182	225412
TOTAL	0	0	288643	738294	713549	767865	296319	175154	118421	304351	97812	29176	3529584

CUTOFF DATE FOR THIS TABLE WAS = 03/11/74


NIAGARA FALLS
BUFFALO
Port Dover
Port Stanley
OE-5
N.Y.
OE-4
OE-3
OE-2
O-3
O-2
OE-1
O-1
DETROIT
WINDSOR
LAKE ST. CLAIR
Kingsville
Pelee Pt.
Turtle I.
TOLEDO
MICHIGAN
OHIO
FAIRPORT
CLEVELAND
Penn.
RIPLEY
ERIE
Statute Miles
LAKE ERIE
DISTRICT BOUNDARY
INTERSTATE BOUNDARY
INTERNATIONAL BOUNDARY

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

March 19, 1975

Mr. P. McCallister
Chief, Engineering Division - Detroit District
Corps of Engineers
U. S. Department of the Army
P. O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

The Department of Commerce reviewed the draft environmental impact statement for "Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan," and forwarded comments to you in our letter of February 28, 1975.

Since that time additional information has developed which is pertinent to the project. This additional information is offered for your consideration.

GENERAL COMMENTS

During the last ten years, vessel traffic in Toledo Harbor decreased by about 40 percent. Lower coal shipment was the basic reason for the traffic drop. With the present energy shortage, it can be expected that the coal shipments will start the upward trend. Dredging activity will continue to be important to the harbor. However, Toledo Harbor suffers from extremely high sediment deposition - 1.2 million cubic yards per year, 80 percent of which is polluted and requires disposal in diked facilities. As time progresses, it will become more difficult to find suitable disposal sites without harming the lake or land environment. Steps should be taken to reduce sediment input. Determination is needed of sediment sources and paths of their movement. These problems should be discussed in connection with the preliminary findings of the Maumee Bay Level B Study cited below. With this information, selection must be made of most effective ways to retain sediment from reaching the harbor.

SPECIFIC COMMENTS

1. PROJECT DESCRIPTION

1.5 DESCRIPTION OF DREDGING OPERATIONS

Page 5, paragraph 1. This paragraph indicates that the project described in this draft environmental impact statement is presently underway. The conclusion could be drawn that the environmental impact statement is "after-the-fact". In order to clarify the document as to the period covered by this draft environmental impact statement, it is recommended that a Fiscal Year be indicated. In addition, consideration should be given to indicating the Corps' procedures for updating EIS's on annual dredging projects such as this.

6. ALTERNATIVES TO THE PROPOSED ACTION

It is recommended that a fifth alternative, source control of sediment, be evaluated. The information obtained from the recommendations concerning sediment set forth above would provide a base for this evaluation.

Thank you for giving us an opportunity to provide these additional comments, which we hope will be of assistance to you.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGION V
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
OFFICE OF
THE REGIONAL DIRECTOR

January 20, 1975

Mr. P. McCallister
Chief, Engineering Division
Department of the Army
Corps of Engineers
P.O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

RE: Draft Environmental Impact Statement
Maintenance Dredging of the Polluted Sediments
Toledo Harbor
Toledo, Michigan

We have reviewed the Draft Environmental Impact Statement for the above project. To our knowledge, and based upon the information provided, this project will not impact to any significant degree on the health, education or welfare of the population.

Sincerely yours,

Robert A. Ford
Regional Environmental Officer

cc: Charles Custard, OEA
Warren Muir, CEQ

United States Department of the Interior

OFFICE OF THE SECRETARY
NORTH CENTRAL REGION
230 S. DEARBORN STREET, 32nd FLOOR
CHICAGO, ILLINOIS 60604

ER 74/1588

February 13, 1975

Colonel James E. Hays
District Engineer
U. S. Army Engineer District
Detroit
P. O. Box 1027
Detroit, Michigan 48231

Dear Colonel Hays:

The Department of the Interior has reviewed the Draft Environmental Statement for the Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Lucas County, Ohio, as requested in Mr. McCallister's transmittal letter of December 27, 1974, to our Assistant Secretary--Program Policy. Our comments which are of both a general and specific nature relate to areas of our jurisdiction and expertise and have been prepared in accordance with the National Environmental Policy Act of 1969.

General:

The statement does not describe adequately fish and wildlife populations associated with the dredging area. Both the description of the present environmental setting and of probable project impacts on the environment are of a general nature. Specific project impacts should be addressed in the statement.

Specific:

2. ENVIRONMENTAL SETTING WITHOUT THE PROJECT

This section should be expanded to include more information on fish and wildlife in the project area.

2.9 Birds

Maumee Bay is noted for its large concentrations of waterfowl during spring and fall migrations. The bay lies within the Chesapeake Bay corridor, a primary route of various species of diving ducks, including the canvasback, whose populations are reaching dangerously low levels because of losses of food producing areas and nesting habitat. Because

of known high waterfowl value of the bay, we believe a more complete discussion is necessary.

2.10 Fish

Additional information, including more quantitative data, would enhance this section. Spawning areas were said to exist but their locations were not identified. Any spawning areas which may be influenced by the dredging project should be specified. A discussion of fish migrations, especially spawning runs, should be included in this section. The value of the project area as a fish feeding and nursery area also should be ascertained.

4. PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT

The statement in the last paragraph on page 16 relating that bottom habitats will be improved by the dredging, is somewhat misleading. This assertion possibly could be true if the dredging was not conducted on an annual basis; however, yearly dredging continually will remove any reestablished benthic populations. In addition, propeller wash also could cause bottom disruption and be detrimental to benthos.

The discussion of disposal impacts on page 18 should be expanded. We realize that an EIS was prepared for the site for future spoil, but impacts associated with the present disposal area should be discussed. The disposal island receives considerable waterfowl use and in the past, botulism has reportedly been a problem resulting in some waterfowl mortality. The planned future use of the site also should be discussed.

5. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

This portion of the statement also should include a discussion of the spoil disposal site. The past and continued filling of Maumee Bay is a definite adverse impact that is unavoidable if the current and future disposal sites are used.

The EIS should discuss the anticipated effects of the dredging on the use of public outdoor recreation facilities in the project area, including Maumee Bay State Park and Riverfront-East Park (land for the latter park recently was acquired by the city from the Penn Central Railroad). Also, if the dredging is expected to have significant impacts on any of these facilities, mitigative measures should be indicated.

7. RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

In the discussion of long-term productivity, page 20 states "Containment of the polluted materials relieves potential adverse effects on the water

quality and will help to protect the Maumee River, Toledo Harbor and Lake Erie for future generations." It should be stressed, however, that the use of shoal waters and other shallow water areas as containment sites destroys the high natural biological production associated with these areas, thereby having a potentially degrading effect on the future of Lake Erie.

8. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

We agree with the first sentence of the third paragraph on page 21 which lists the loss of a portion of Maumee Bay as irretrievable; however, we suggest that the second sentence be qualified. Development of the disposal site is not a positive action with respect to fish and wildlife habitat values.

Sincerely yours,

Madonna F. McGrath

Madonna F. McGrath
Acting Special Assistant
to the Secretary

United States Department of the Interior

OFFICE OF THE SECRETARY
NORTH CENTRAL REGION
230 S. DEARBORN STREET, 32nd FLOOR
CHICAGO, ILLINOIS 60604

ER 74/1588 March 7, 1975

Colonel James E. Hays
District Engineer
U. S. Army Engineer District
Detroit
P. O. Box 1027
Detroit, Michigan 48231

Dear Colonel Hays:

This supplements our February 13, 1975 review of the draft environmental impact statement for Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Lucas County, Ohio. If these comments reach you too late to be considered in preparation of the final environmental impact statement, you may be able to use them in other aspects of project planning.

Channel sediments have been described as unpolluted lakeward from a point about five miles northeast of the mouth of Maumee River (p. 3). It is stated that "about 20% of the material is classified as clean" (p. i, paragraph #2), but no analyses or other descriptive data appear to have been provided to support the conclusion that sediments in the outer 13 miles of channel are unpolluted, or to support the selection of the five-mile point as a cut-off point for confined spoil disposal. Analytical data for all sediment samples have been expressed in terms of mean values or of ranges in values (Table A), and no indication of the number of samples analysed, or of the locations of the samples has been provided. It is stated that sediments in the channel beginning five miles from the river mouth "are similar in nature to the lake bottom materials" (p. 3 center), but no description of these materials has been found in the draft statement.

We believe the figure given on page 12, third line from the bottom, of 2,212,000 tons/year for total solids (assumed to mean suspended sediment plus dissolved solids) may be in error. Our records indicate that the annual sediment discharge for the Maumee River at Waterville, for the 23-year period 1951-73, is 1,190,000 tons. Based on this figure, the calculated value for mean dissolved solids concentration would equal 222 mg/l. This value is lower than we would expect based on the range

in specific conductance at the Waterville site, determined from our continuous monitor records. Also, Table F, page 12, gives a range for suspended solids values of 11.8 to 547.4 mg/l. Our 23-year record indicates a range in values of 8 to 1,380 mg/l.

Sincerely yours,

for David F. Jarvis

Madonna F. McGrath
Acting Special Assistant
to the Secretary

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Great Lakes Fishery Laboratory
1451 Green Road
P. O. Box 640
Ann Arbor, Michigan 48107

IN REPLY REFER TO:

January 21, 1975

U. S. Army Engineer District, Detroit
ATTN: Chief, Environmental Resources Branch
P. O. Box 1027
Detroit, Michigan 48231

Gentlemen:

Mr. Harry Van Meter and I are pleased to offer the following comments on the Environmental Impact Statement, "Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan," (December 1974 Draft).

Cover page and page i: The title of this EIS should be " ... in Toledo Harbor, Ohio."

Pages 2 and 3, Table A: Such tables are of questionable value without means for lead, zinc, and iron; sample sizes for all parameters; and sample standard deviations or standard errors of the means.

Page 4: The 1,175,000 cubic yards removed annually given in paragraph 1 is 85% of that in paragraph 2. Report only the latter figure, since it is derived from Table B. (But also see page i.)

Page 5: Point (b) conflicts with the second complete paragraph on page 19.

Page 8, paragraph 1, sentences 4, 5, and 6: River discharge or flow is expressed in three different units--cubic meters, cubic meters/sec, and cubic feet/sec. Adopt one of the last two.

Page 15, section 2.10, paragraph 1: Change sentence 1 to "Maumee Bay's principal fish species and commercial catch are shown in Table I." Delete the last sentence. Change the heading for Table I to "COMMERCIAL FISH PRODUCTION, MAUMEE BAY AREA (1971)."

Page 17, top: This conflicts with the second paragraph on page 18.

Page 19, first full paragraph, last two sentences: Fish species and benthic organisms may return and recolonize, but do you expect them to be of the same (or better) quality and quantity?

Page 20: Subpoints 6.3 and 6.4 should be entered to correspond with (3) and (4) on page 19.

Sincerely yours,

Paul M. Haack

Paul M. Haack
Project Leader
Biometrics and Computer Services

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION 5
18209 DIXIE HIGHWAY
HOMEWOOD ILLINOIS 60430

January 24, 1975

IN REPLY REFER TO:
05-00.5

U. S. Army Engineer District, Detroit
P. O. Box 1027
Detroit, Michigan 48231

Attn: Chief, Environmental Resources Branch

Gentlemen:

As requested in your December 27, 1974, letter, we have reviewed the draft environmental statement for Maintenance Dredging of Polluted Sediments, Toledo Harbor, Ohio.

We have no comments to offer regarding the proposed improvement.

The opportunity to review and comment on the draft environmental statement is appreciated.

Sincerely yours,

H. L. Anderson
Regional Administrator

By: R J Betsold
for W. G. Emrich, Director
Office of Environment and Design

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Address reply to:
COMMANDER (mep)
Ninth Coast Guard District
1240 East 9th St.
Cleveland, Ohio 44199
Phone: 216-522-3918

5922

Department of the Army
Detroit District, Corps of Engineers
P.O. Box 1027
Detroit, Michigan 48231

Re: NCEED-ER

Dear Sir:

The Draft Environmental Impact Statements listed below have been reviewed by this office and at this time we have no comments to offer.

Draft Environmental Statements entitled:

Maintenance Dredging of Unpolluted Harbors in Michigan

Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan

Maintenance Dredging of Polluted Sediments Monroe Harbor, Michigan

Saginaw River Dredge Disposal Project at Saginaw Bay, Michigan

Sincerely,

W.C. OCHMAN
Captain, U.S. Coast Guard
Chief, Marine Safety Division
By direction of the Commander,
Ninth Coast Guard District

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN STREET
CHICAGO, ILLINOIS 60604

MAR 27 1975

Mr. P. McCallister
U. S. Army Engineer District, Detroit
P. O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

We have completed our review of the Draft Environmental Impact Statement (EIS) for Maintenance Dredging of Polluted Sediments in Toledo Harbor, Ohio as requested in your letter of December 27, 1974. We have classified our comments as Category ER-2. Specifically, this means that we have environmental reservations regarding the project and we believe that additional information should be provided in the EIS to fully assess its environmental impacts. The classification and date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act.

Our primary concerns relate to the project's efforts upon water quality, the remaining capacity of the confined disposal facility and the possibility that spoil material beyond mile point 5 may be polluted and disposed in the open waters of Lake Erie. We offer the following comments.

PROJECT DESCRIPTION

Additional information and exhibits are required on the existing Toledo Island confined disposal facility (CDF) with regard to the composition and integrity of its dike design and average spoil elevation; location of the existing weir overflow works; the pipeline structure and pumpout mooring facility for the hoppers; the average retention time afforded prior to discharge through the weir; status of vegetative cover and spoil effects; and the past effects of wind and water erosion on the dike structures and spoil material.

With regard to the materials to be dredged, it is true that U.S. EPA has classified bottom sediments in the navigation channel out to mile point 5 as polluted. However, since we have not classified bottom sediments in the channel from mile point 5 and beyond, it should not be assumed that these sediments are unpolluted. Since it has been standard practice not to sample beyond the 5 mile point and because of the difficulty in obtaining samples, knowledge of the pollutional status of the sediments does not exist. Due to the

consistency of the sediment criteria at each of the survey stations out to mile point 5, we request that the sediments from mile point 5 to the outer project limits of dredging be sampled at one mile intervals in the near future and that this information be presented to our office for review. It should be noted in the EIS that U.S. EPA resampled the Toledo Harbor area last March 27, 1973. A copy of the survey report is available and should be incorporated in the EIS.

The disadvantages of utilizing a hopper dredge should also be detailed in the EIS. It should be mentioned that the high turbidity encountered in the hopper's overflow is caused by the displacement of a supernatant containing a fine suspension of clays, silts, inorganic and organic pollutants by more settleable and larger sediment particles. The adverse effects of resuspending these fines and pollutants into the aquatic environment should be discussed in more detail. The EIS should also indicate the average volume of overflow discharged from each hopper dredge per operation trip in this harbor to achieve the desired volume and spoil mixture for transport to the CDF. Due to the fine silt and clay characteristics of the bottom sediments in this harbor and their highly polluted nature, the problem associated with hopper overflow in this harbor "is acute" (page 17) and requires remedial measures in order to mitigate potential adverse water quality impacts. We believe that overflow discharges from the hopper's overflow trough should be kept to a minimum. In addition, any discharge of light material thru limar discharge pipes from the hoppers should be eliminated. We recommend that hopper rinse water be pumped directly to the CDF rather than discharging it to the bay. The elimination of hopper overflows - as has been done by Army Corps of Engineers, Philadelphia District on the Delaware River - by pumping the resultant spoil mixture into the CDF from the hopper via pipeline at the pumpout facility should be considered and discussed in the EIS. The economic and environmental costs and benefits of transporting the desired high solids spoil mixture as opposed to a less concentrated spoil mixture should be compared and thoroughly discussed.

ENVIRONMENTAL SETTING

For your information, the Cleveland District Office or Ohio District Office of EPA referred to in Section 2.6 was redesignated as the Michigan-Ohio District Office on June 28, 1974. This office has informed us that the statement in this section regarding standards is not accurate. We are aware that the State of Ohio has proposed water quality standards for Lake Erie (February 12, 1974) which would be applicable to the waters affected by the disposal area. We suggest the Corps of Engineers obtain a copy of these proposed standards for inclusion in appropriate sections of the Final EIS.

We request that Tables G & H be deleted from the Final EIS since this criteria for dredged spoil classification is not to be used in the objective sense. Pollutional classification is made on a case-by-case basis considering the existance, amount and combination of pollutants present in dredged spoil - inclusion of classification tables in the EIS will only confuse readers who are not knowledgeable of this process.

According to the Corps of Engineers Dredge Material Research Program Contract Report D-74-4 Identification of Objectionable Environmental Conditions and Issues Associated with Confined Disposal Areas - September, 1974, the present Toledo Harbor Island CDF had an expected capacity of 1.000 million cubic yards (MCY) in September, 1973 and was being filled at that time. A discussion is warranted in the EIS on the remaining capacity at the Toledo Island CDF for the subject project. The explanation on page 5 that dredging operations for"Fiscal year 1974 are still underway at Toledo and are scheduled to be completed by mid-December" requires clarification. The disposal in the CDF during September, 1973 was within the Fiscal year 1974 time frame whereas the completion of disposal operations during December, 1974 was in Fiscal year 1975. The EIS indicates that 1.076 MCY of material was predicted to be dredged in 1974. It should be explained what portion of this material was dredged in Fiscal year 1974 and Fiscal year 1975 and how much material was dredged in the fall of 1973. Assuming that 80% (page i of the EIS) of the 1.076 million cubic yards was polluted and required confinement, the remaining CDF capacity for future disposal operations should be less than .139 MCY (1.000 MCY Remaining Capacity late 1973 - .861 MCY Disposed in 1974 - X MCY Disposed in late 1973 $\leq$ .139 MCY Remaining Capacity). However, the EIS indicates on page 6 of the EIS that possibly one year of capacity remains at the Toledo Island CDF. This apparent discrepancy with the computed .139 MCY Remaining Capacity that was derived from figures presented in both the EIS and the Contract Report requires an explanation.

The Contract Report also mentions that "wave action and floods have eroded the original dike so that it is now flattened" and is thus contributing to the "erosion of the clay material of the secondary dike." The EIS should detail the past and existing effects of wave and wind erosion upon the CDF and discuss how these problems are being mitigated. Failure of dike structures should be prevented in order to preclude water quality degradation from the entry of polluted materials into Maumee Bay. We suggest that remedial measures be implemented as soon as possible.

ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

It is noted in the EIS that water quality will be further degraded by dredging but the magnitude of the effect is impossible to determine. A better description of the "temporary" (page 18) effects should be included. We request that water quality in the area being dredged and at the CDF overflow weir be monitored before, during and after dredging operations for the parameters listed on page 18. A biological investigation of each of these areas should also be made so that some correlation can be made between the effects upon aquatic organisms (flora and fauna) and possibly waterfowl relative to the project's impacts upon water quality. The acquired information would provide a better prediction of future effects upon water quality and the aquatic ecosystem from such activities and would provide some insight as to how O&M activities might be modified to further minimize environmental degradation. The EIS should specify the period during the year when O&M activities will occur at Toledo Harbor.

ALTERNATIVES TO THE PROPOSED ACTION

Since the purpose of this project is to perform maintenance dredging at Toledo Harbor, the EIS should provide a more comprehensive discussion of alternative methods and processes for operational dredging in Toledo Harbor in addition to the disposal alternatives already discussed.

The additional time granted and the opportunity to review this Draft EIS is appreciated. Should you have any questions regarding our comments, please contact Mr. Gary A. Williams or me at 312-353-5756.

Sincerely yours,

Donald A. Wallgren
Chief,
Federal Activities Branch

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
1 NORTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

February 13, 1974

Mr. Michael Davinich
Chief, Construction-
Operations Division
U.S. Army Engineer District,
Detroit, Corps of Engineers
P. O. Box 1027
Detroit, Michigan 48231

Dear Mr. Davinich:

Reference is made to a telephone conversation on January 17, 1974 between you and Mr. David Kraus of our office, concerning the pollution classification of Toledo Harbor, Ohio.

In our letter of January 4, 1974 to Colonel Hays, we sent you our latest data and findings concerning the bottom sediment analysis of Toledo Harbor, Ohio. In addition, we determined that none of the dredge spoil from Toledo Harbor was suitable for open lake disposal. In view of the fact that the project area for Toledo extends far out into Maumee Bay, we would like to clarify our statement. All dredge material taken from the upstream limit in the Maumee River to the 5 mile buoy in the approach channel is classified as polluted and unacceptable for open lake disposal. The remaining portions of the approach channel is considered unpolluted.

If you need any additional information or clarification, please feel free to contact our office.

Sincerely yours,

Robert W. Zeller, Ph. D.
Director, Surveillance &
Analysis Division

April 16, 1975

Mr. F. McCallister
Chief, Engineering Division
Department of the Army
Detroit District, Corps of Engineers
P.O. Box 1027
Detroit, Michigan 48231

Re: Draft EIS
Dredging of Sediments
Toledo Harbor, Ohio

Dear Mr. McCallister:

This is in response to your letter of March 31 requesting our comments on the Draft EIS for the above project.

We feel that the proposed project will not affect any properties, either prehistoric or historic, which are listed on, nominated to, or eligible for the National Register of Historic Places.

As for an evaluation of the document itself, we note no evidence that the National Register was consulted during project planning to learn whether any National Register properties might be involved. Our recommendation for future projects is that your agency consult the National Register and also contact this office for information on properties which may be in project areas but have not yet been nominated to the National Register. As you may know, the Ohio Historic Preservation Office as part of its duties is conducting a statewide inventory of prehistoric and historic properties; its purpose is to discover those properties which are eligible for the National Register.

A problem is that the statewide inventory is not complete, and because of staff and funding limitations we do not expect to complete it for some time. Therefore in some future projects it may be necessary for the Corps of Engineers to undertake its own prehistoric and historic surveys, as is required by federal law, to insure adequate attention and protection for significant properties.

Thank you for the opportunity to review this document and to make the above comments.

Sincerely,

Thomas H. Smith
State Historic Preservation Officer

A.c.: OEPA

Ohio Historic Preservation Office
Ohio Historical Center I-71 & 17th Avenue Columbus, Ohio 43211 (614) 466-87

Interstate 71 and 17th Avenue

the ohio historical society / ohio historical center / columbus, ohio 43211 / telephone (614) 466-~~4663~~ 5347

January 2, 1975

U.S. Army Engineer District, Detroit
Attn: Chief, Environmental Resources Branch
P.O. Box 1027
Detroit, Michigan 48231

Dear Sir:

I have examined the environmental impact statement on maintenance dredging of polluted sediments in Toledo Harbor, Toledo, Ohio. The project should not have any effect on archaeological resources.

Sincerely,

Martha Potter Otto
Associate Curator of Archaeology

MPO/pl

State of Ohio Environmental Protection Agency, Box 1049, 361 East Broad Street, Columbus, Ohio 43216 (614) 466-8565

February 27, 1975

Re: Draft Environmental Impact Statement, Toledo Harbor Operation and Maintenance, U.S. Army Corps of Engineers

Chief, Environmental Resources Branch
U.S. Army Engineer District, Detroit
Detroit, Michigan 48231

James A. Rhodes
Governor
Ned E. Williams
Director

Dear Sir:

The Ohio Environmental Protection Agency has been charged, by the Governor, with lead agency and review coordination responsibilities for the State of Ohio on Federal Environmental Impact Statements. The above referenced Draft Environmental Impact Statement has been reviewed by sections of this Agency, the Ohio Department of Natural Resources, the Ohio Department of Economic and Community Development, and the Ohio Department of Transportation. The following comments constitute those received from the above agencies and have been coordinated under the auspices of the State Clearinghouse.

General:

The Draft EIS, as presented, has serious flaws within its structure. NEPA, Council on Environmental Quality, and, in some cases, U.S. Army Corps of Engineers regulations have not been met. These overlooked regulations are noted in the Specific Comment Section of this letter. A more important concern however, is the lack of hard, updated data within the document. It is possible that no recent data is available in some instances, however, there is no mention in the EIS whether or not this is true. Other minor items (as mentioned in Specific Comments) tend to impair the quality of the document. While some would seem to be inconsequential, taken as a whole they put the credibility of the document in question. It should be kept in mind that the purpose of this document should be to describe the environmental impacts of dredging and depositing sediment, polluted and non-polluted, and that baseline information that would allow a reader to establish that impact is of prime importance.

It should be noted that the comments included in this letter are not intended to be an indictment of maintenance dredging. The purpose of these comments is to allow the Corps to produce a concise, quality document, portraying the environment they will be dealing with, and any effects (adverse or beneficial) which may accrue because of their activity in that environment.

Specific Comments

Title Page - Toledo Harbor is in Ohio.

Summary

The statement in Section 3(A) on page i to the effect that a reduction of possible fish populations would occur because of the project is confusing. The fish populations are not "possible;" they are, in fact, there. It is assumed that the writer meant the "possible reduction of fish populations," this however, should have been listed under the next heading, (B) Adverse Environmental Effects.

Page ii - The proximity of the words "feasible but impractical" is unclear. The terms seem nearly contradictory. Appendix C Section 4(h), "Content of Statement-Alternatives to the Proposed Action" of Army Corps of Engineers, Federal Register, March 21, 1974 calls for "viable" alternatives. It would seem that if the alternatives were feasible (viable), they would, to some extent, be practical. A re-working of this section would seem in order.

Page 2 (Section 1.4) - Table "A" in this section has questionable value in determining the quality of the polluted sediment. Since 1968, the Corps has dredged 8,332,000 cubic yards of material from this area. Up to 80 percent of this would have been classified as polluted. Apparently no data has been assembled since 1968 concerning the present quality of the sediments (other than the USEPA data inserted in Table H.) It would seem appropriate for the Corps to update these findings to present pollution levels for two reasons:

1. With 4 million plus cubic yards of polluted material having been removed, the polluted spoil may have been reduced in volume or,

2. If the USEPA data in Table H is representative of a general increase in pollution level of the material, then polluted spoil may be more widespread than previously believed. In either case this update will enable the Corps to more effectively establish the amount of dredged material that needs to be disposed of in a diked area.

This same reasoning could effect the five mile polluted/non-polluted point established in 1968.

Page 4 (Section 1.5) - There is no description or discussion of the process by which the polluted spoil will be put into the island disposal site. The process, the equipment that will be used, and the safety precautions that will be observed should be described. The area slated for open lake dumping the 20 percent non-polluted material should be noted, along with procedures to be used in the open lake dumping process. In addition, the expected times of the year and durations of dredging activity should be mentioned, such that the length of any environmental impacts can be established.

Page 6 (Section 2.1) - Will the present diked disposal area be filled prior to the completion of the new 242 acre site (described in the Corps of Engineer Final EIS on Toledo Harbor Diked Disposal Site #3, dated February 1974)? If so, what measures will be taken for disposal of polluted spoil if any dredging will be done in the interim?

Page 6 (Section 2.1) - This section should include mention of the dredging area. A description of the channel characteristics (depth, shoreline) and outer harbor characteristics should be displayed, as well as any environmentally sensitive areas in the vicinity. Major intakes/outfalls in or near the channel should be noted. The Toledo Harbor Diked Disposal Site #3 should be displayed on Figure #1.

Page 8 (Section 2.4) - Please provide a reference for this section.

Page 8 (Section 2.5) - It would seem that the best justification for this project is presented in this section. However, no analysis of the reasons for declining tonnage is given. Is it caused by the need for dredging? Are other, socioeconomic factors involved? And, most importantly, can it be shown that continued dredging will stem or turn around this decrease in tonnage?

Table F, pages 11 and 12

There are several errors in Table F: two of them make it difficult to interpret the data; the other two are editorial oversights.

Conductance usually is expressed in micromhos at 25 C, specific conductance in micromhos per centimeter at 25 C. In Table F, there is an entry called conductance, the units being micro-ohms/cm, temperature unspecified. The ohm is a unit of electrical resistance, the mho (ohm spelled backwards) is a unit of electrical conductance. It is important to specify whether conductance or specific conductance ("conductivity") is meant because the cell constant, k, of the conductivity probe must be known if the units are micromhos. Depending

upon the cell constant, the value given in the table may have to be multiplied by k to get values that can be compared with the data of others. Also, the temperature of the solution influences the measured values. Usually, but not always, conductance and conductivity are given for a temperature of 25 C; therefore, the temperature must be specified to avoid misinterpretations.

The units in which turbidity is expressed (Table F) are not specified (we doubt that they actually are mg/l).

The accepted international form is pH, not p^H, to designate hydrogen-ion concentration. The reduction-oxidation potential should be indicated with the abbreviation Eh, not eh.

Page 14 (Section 2.8) - It seems necessary that there should be, at least, quantitative data on the predominant species of phytoplankton and zooplankton given for the area.

The dominant benthic invertebrate species present should be documented beyond "pollution-tolerant" in order to establish their neccessity (or lack thereof) within the food chain.

Page 15 (Section 2.10) - Specifics as to spawning areas and general spawning periods should be provided in this section to the extent possible. If available, more recent data (Table I) should be displayed. Two minor points should be clarified; (1) "white fish" is not a principal species, this should be white bass and, (2) "Carp" should be added to the first sentence of Section 2.10.

A section should be added mentioning dominant mammal, amphibian, and reptile communities in the surrounding wetland areas. This section could be structured much like Section 2.9 (Page 15).

Page 16 (Section 3) - Pursuant to Section 9(g)(6) of Corps of Engineers Federal Register of March 21, 1974, a statement concerning the effect or impact of the proposed action on threatened, rare and endangered species of fish wildlife should be provided.

It should also be noted that requirements of Sections 9(g)(7) and 9(g)(9) of the above referenced Federal Register have not been included in the EIS.

Page 16 (Section 4.1) - The third paragraph in this section is confusing. It is difficult to understand how bottom habitat or water quality will be improved because of dredging since dredging is not a "final" solution. The statement is made in Section 1.5 that 12,401,000 cubic yards of material have been dredged since 1965, with an estimation of 1,076,000 cubic yards being dredged in 1974. If nine years and 13.5 million cubic yards of dredge material have not improved either sediment or water

quality, another year's dredging will, in all probability, do little in the way of improving these factors. While it is easy to see the economic benefit of dredging, and possibly the environmental benefit of using diked disposal areas for polluted spoil; water quality benefits would seem to accrue, not from dredging, but from wise soil management and proper wastewater control. Section 4.2 of the EIS points out that dredging does not, in itself, effect any substantial long-term environmental or ecological benefits and that the navigation channel is subject to considerable fill along its sides each year, thus necessitating annual dredging. Possibly the third paragraph of Section 4.1 should be deleted.

Page 17 (Section 4.2) - What mitigative measures (if any) can be taken to control or reduce hopper bin overflows? It is stated that this is a negative impact of main concern. If unavoidable, it should be discussed in greater detail in Section 5.

With regards to the last paragraph of Section 4.2, the magnitude of the effect of dredging on water quality, during dredging operations, can be determined to some extent. The measurement of JTU turbidity change, employment of Secci Disk operations, and establishing the extent of the silt plume can all be done during dredging operations. The use of these methods can establish historical data for ongoing or proposed dredging operations, enabling them to estimate impacts in a concise, quantitative manner for future operations.

If possible, please give a time period necessary for water quality to return to its original level. It would be helpful to put this in relation with the duration of dredging so a total time element of environmental degradation can be established.

Page 18 (Section 4.3) - The discussion of disposal impacts is rather general. The precautions that will be taken to prevent spilling should be specified. Mention is made of an overflow weir. Will the quality of water discharged from the DDS be much different in terms of suspended solids, nutrients, and heavy metals?

Some mention should be made as to the impacts associated with the open lake dumping of the non-polluted spoil. These impacts would depend on where the spoil is dumped (as yet unspecified).

Page 18-19 (Section 5) - Some question has been raised concerning the statement that Fish Species and benthic organisms recolonize after dredging ceases. If possible, data should be provided supporting this. If data is not available, the statement that the "net effect of dredging will be slight" (at least from a recolonization standpoint) may be inappropriate.

Page 19 (Section 6) - It is felt that alternatives two and three should be combined, since the only way open lake dumping of all sediments can be accomplished is through treatment of at least a portion of the materials. It seems that the EIS has correctly combined these two in Section 6.2. In line with this, the economic data concerning this alternative, as well as the proposed action, should be displayed in the Final EIS, if not displayed in the Statement of Findings which would accompany the Final EIS.

Page 21 (Section 9) - This section should be assembled as required by Appendix C, Section 4(k), "Coordination and Comment Response," of COE Federal Register, dated March 21, 1974.

Soils

While the environmental impact of the entire spoil-disposal program on soils was greatly reduced when a site in the lake, and not one on land, was selected, the draft EIS should contain a section on soils. Although the published soils information for Lucas County is somewhat limited (the Soil Conservation Service's Soil Survey of Lucas County is in progress), the following sources of soils information for the Maumee Basin do exist:

(1) Know Ohio's Soil Regions, Division of Lands and Soils, Ohio Department of Natural Resources (1973). This publication shows the dominant soil associations for the Maumee River Watershed.

(2) Soil Survey of Lucas County, Ohio Agricultural Experiment Station and United States Department of Agriculture. This Survey is currently being updated. Copies are available from the Soil Conservation Service.

(3) Some soils information should be obtained from the local Soil Conservation Service office in Lucas County.

The following statement is made in Section 1.4 ("Materials to be Dredged"): "The major portion of the sediments are derived from river bank and land sheet erosion." The following statements are made in Section 2.2 ("Geologic and Topographic") "Soybeans and corn are the two principal crops which leave the soil bare and vulnerable to open erosion during the winter. consequently, extensive sheet erosion occurs and the silt..." In both of these cases, it would have been appropriate to mention either the dominant soil types or the soil associations of the watershed and to discuss the soil properties that result in extensive soil erosion.

As stated previously, the intent of these comments is to assist the Corps in producing a high quality document, not to impede any necessary dredging in the area. If the intent of this EIS is to be an approval for maintenance dredging in subsequent years, then a high quality

document is essential. If this EIS is for 1975 dredging only, then high quality is equally necessary, such that a firm data base can be established for production of subsequent Environmental Impact Statements concerning future maintenance dredging.

The State appreciates the opportunity to review this Draft EIS and looks forward to reception of the Final EIS.

Very truly yours,

Ned E. Williams, P.E.
Director

NEW/mar
81101.2

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING, LANSING, MICHIGAN 48926

HOWARD A. TANNER, Director

February 14, 1975

Mr. Phillip McCallister
Chief, Engineering Division
Corps of Engineers
P.O. Box 1027
Detroit, Michigan 48231

Re: NCEED-ER

Dear Mr. McCallister:

We have reviewed the draft environmental statement for the proposed "Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan." Although this project is located in Ohio, we feel that there could be some secondary effects on water quality, fish and wildlife of interest to the citizens of Michigan. We therefore appreciate the opportunity to comment on this draft environmental statement.

We feel that the statement is generally lacking in data regarding the impact of the proposed dredging and disposal of polluted materials upon the aquatic environment. Additionally, because these disposal sites are attractive resting places for ducks and other birds, there is a very real danger of waterfowl contacting C-type botulism. There is no discussion regarding the risk of heavy metals passing up through the food chain into waterfowl using the disposal site. Humans could then be affected by eating game bird species shot during hunting seasons. The statement should address itself to these types of problems.

The remainder of our comments will be addressed to page and paragraph of the text for your convenience.

Page i, item 3

A "reduction of possible fish populations" is mentioned. This statement does not appear to identify anything and should be rephrased.

Page 7, paragraph 4
If farming practices leave soil as vulnerable to sheet erosion as stated, corrective steps should be taken by responsible agencies. We suggest that these agencies be identified and that this problem and other sources of pollution to the river be more thoroughly discussed.

Page 13, Table G
The criteria presented in this table should be identified as either EPA or State of Ohio criteria. Describe what is meant by the term "selected."

Page 15, items 2.9 and 2.10
More thorough data and associated information on fish and wildlife is needed.

Page 15, Table 1
A better citation is needed on the sources of data presented here.

Page 16, item 4, paragraph 3
It is stated that the bottom habitats of dredged areas will improve after the polluted sediments are removed. It should be indicated that such relief will be only temporary, and that the time between maintenance projects could be extended if farming and industrial soils practices were upgraded. Also, shipping channels are less than ideal habitats for benthic populations (re: fish and wildlife studies in the St. Mary's River by Jarl Hiltunen). We do not agree that nutrients and heavy metals won't be reintroduced into solution or suspension as a result of dredging. This is the reason why dredging was ruled out in the mercury tainted sediments in the St. Clair River. We feel that the chances of these materials being released into Lake Erie are enhanced by the dredging activity.

Page 18, item 4.3
It is stated that the impact of disposal into a confined diked area is considered minimal. We suggest that the impact on the inhabitants or potential inhabitants in the disposal area should be considered.

Page 18, item 5
The efforts that are being taken to eliminate or reduce any adverse effects of maintenance dredging operations should be described here.

Page 19, paragraph 2
It is stated that fish species avoid the disturbed area during dredging operation and will return after the operation is completed. It is also stated that benthic organism will recolonize. These claims should be substantiated from the literature.

Page 20, paragraph 1
It is stated that polluted material would "gradually seep into Lake Erie." We suggest that more definite information be provided.

Page 20, item 6.2, paragraph 1
We suggest that it be thoroughly discussed how this alternative is ecologically detrimental.

Page 20, item 6.2, paragraph 3
The location of the site being prepared for future disposal should be given.

Page 20, item 7.1 and 7.2
These sections should discuss the environmental impacts relative to short and long-term effects. This is the purpose of an environmental impact statement.

Page 21, item 8, paragraph 3
The type of future development considered for the completed diked island, and future maintenance that may be necessary to prevent the escape of the polluted materials, should be discussed.

We hope that these comments will be helpful in the preparation of the final statement. Should you have any questions please contact us.

Sincerely,

Howard A. Tanner
Director

HEALTH PLANNING ASSOCIATION OF NORTHWEST OHIO

225 ALLEN AT W. WAYNE STREET, MAUMEE, OHIO 43537 / (419) 893-0287

January 20, 1975

U.S. Army Engineers
District Detroit
P.O. Box 1027
Detroit, Michigan 48231

RE: Comments of the Health Planning Association of Northwest Ohio regarding the proposed dredging of polluted sediments in Toledo Harbor, Ohio.

ATTENTION: Chief, Environmental Resources Branch:

Dear Sir:

Thank you for the opportunity to comment upon the Draft Environmental Statement which discusses the proposed dredging and confinement of polluted sediments in Toledo Harbor, Ohio. We are in agreement with the need for dredging and confining these sediments in order that the Harbor remain navigable for commercial purposes. In addition, we would like to offer for your consideration, the following questions and suggestions:

1. Will consideration be given to a program that would monitor, on a yearly basis, the quality of sediments in the Harbor in order to more accurately determine the present situation? Your statement on page 2 indicates that the last analysis of sediments was done in 1967 by the Great Lakes Research Center.

2. On page 16, you noted that upon completion of deposition of the dredged material into the disposal site, the area or site would be turned over to local government for development. If this is the case, which unit of government would receive the site, what possible land uses have been discussed or considered, and who will be responsible for inspecting the site as to its structural status? Upon turn over to local government, what provisions have been made for the continual upkeep of the disposal site?

3. While the present need for dredging is apparent, this method of control does little or nothing to remove the cause of the problem. The result is a continual need for disposal sites and dredging and continued encroachment into our public waters. What is the status of alternative means of disposal and/or control currently being researched or studied? What is being done or planned to reduce the sediment loading in the Maumee Bay and associated waters?

Thank you again for the opportunity to comment. If our agency can be of any assistance, please feel free to contact us.

Sincerely,

HEALTH PLANNING ASSOCIATION
OF NORTHWEST OHIO

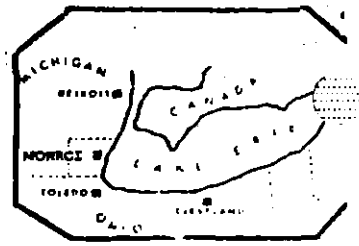
Gary F. Bennett, Ph.D., Chairman
Regional Environmental Health
Committee

GFB/slr

cc: O.E.P.A.
City of Toledo - Mayor
Toledo Lucas County Port Authority

Lake Erie Advisory Committee

DEDICATED TO THE PRESERVATION OF LAKE ERIE, ITS WATERS, FISH AND WILDLIFE



January 14, 1975

Subject: Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Ohio, Draft Environmental Impact Statement, December 1974

To: U.S. Army Engineer District, Detroit
ATTN: Chief, Environmental Resources Branch
P.O. Box 1027
Detroit, Michigan 48231

Dear Sir:

The Lake Erie Advisory Committee (LEAC) appreciates the opportunity to comment upon the draft environmental impact statement (EIS) concerning proposed dredging of polluted sediments in Toledo Harbor, Ohio, dated December 27, 1974. LEAC finds it hard to understand why the draft EIS has not been coordinated with the U.S. Army Engineer District, Buffalo, which has been charged with the Lake Erie Wastewater Management Study (April 1974) by Congress pursuant to Sections 108 d and e of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500). Section 105 (d) (2) specifically states "Such a program (wastewater management for the rehabilitation and environmental repair of Lake Erie) should include measures to control point sources of pollution including bottom loads, sludge banks, and polluted harbor dredgings." Since the Maumee River is the single greatest source of sedimentation in the entire Great Lakes system, it would seem most urgent to consider the provisions of P.L. 92-500. This draft statement prepared by the Detroit District is not comprehensive in scope and boldly illustrates the old adage "The right hand does not know what the left hand is doing."

LEAC strongly recommends that the provisions of P.L. 92-500 be incorporated into this draft EIS and that the expertise gained by the Buffalo District be utilized even if the two Corps Districts must be merged to achieve this end. Why do taxpayers have to subsidize studies and projects that duplicate each other without the benefit of being coordinated to increase the benefits derived there from or increase the overall store of knowledge? Why do the various Corps Districts operate autonomously? Can't Maumee Bay be a demonstration project under P.L. 92-500 for the rehabilitation and environmental repair of Lake Erie?

Sincerely,

Richard G. Micka

Richard G. Micka
1216 Riverview
Monroe, Michigan 48161

cc U.S. Senator Robert Griffin
Congressman Marvin Esch
State Representative Raymond Kehres
Council on Environmental Quality
Office of Federal Activies, EPA
Region V, EPA
U.S. Fish And Wildlife Service
Ohio EPA
MUCC
Monroe Evening News
U.S. Army Engineer District, Buffalo

THE NATIONAL ASSOCIATION OF
River and Harbor Contractors

536 WASHINGTON BUILDING
FIFTEENTH & NEW YORK AVE., N. W.
WASHINGTON, D. C. 20005
TELEPHONE 202/783-2470

January 15, 1975

U. S. Army Engineer District, Detroit
ATTN: Chief, Environmental Resources Branch
P.O. Box 1027
Detroit, Michigan 48231

Gentlemen:

We have received a copy of the Draft Environmental Impact Statement for Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan. In accordance with your letter of 27 December 1974 which accompanied the Draft Statement, we ask that the final Impact Statement be modified to reflect the following comments:

1. As outlined in Paragraph 1.2, the entire content of the Draft Statement deals only with the required maintenance dredging of the Toledo Harbor, Ohio Federal Navigation Channels. In order to be in conformance with 33US Code of Federal Regulations 209.145 (f) (vi) and (g) (1) (vi) the Statement should include dredging requirements of non-Federal interests in the Toledo area.

   209.145 (f) (vi) states:

   > "If it can be anticipated that related work by other Federal interests will occur in the same general area as the Federal project, the District Engineer will include and consider this related work in his planning processing and review of the Federal project under this regulation. To the maximum extent possible, he will coordinate with interested Federal, State, regional and local agencies and the general public simultaneously with the related projects."

   209.145 (g) (1) which outlines items to be included in public notices states under (vi):

   > "The nature, estimated amount, and frequency of known and anticipated related dredging and disposal to be conducted by others:"

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P.O. Box 1027
Detroit, Michigan 48231

January 15, 1975

2. Paragraph 1.5 and several succeeding paragraphs limit the description of dredging operations to specific Government owned and operated hopper dredges. Since the Statement should include non-Federal dredging, which will not be done by Government owned dredges, and also to maintain flexibility in the methods used for dredging the Federal Channels, a description of the dredging operations should include bucket and hydraulic dredging as well as hopper dredging.

   It would appear not to be in the best interests of the Government to limit the dredging to Government owned hopper dredges. Dredging loads may require the use of the Government owned dredges elsewhere, or economic considerations and Corps policy may indicate the desirability of accomplishing the work by contract methods. The equipment used might then be bucket, hydraulic, or hopper type dredges.

   In the Draft Environmental Statement issued by your office for Maintenance Dredging of Unpolluted Harbors in Michigan, dated December 1974, the description of the dredging operations for a number of the harbors reads as follows:

   > "As currently proposed, dredging will be performed by either a hopper, dragline, clamshell or bucket dredge plant." (quoted directly from Page A-114).

   In our opinion, a similar statement, but expanding it to include hydraulic dredging, would serve the best interests of the Government.

3. On Page 5, three advantages are listed for utilizing the hopper dredge. Listing alledged hopper dredge advantages without including the advantages of other types of dredging may be self-defeating and subject to improper or invalid conclusions.

4. The first sentence of Paragraph 4.2 is not necessarily true. It states that "Dredging of polluted sediments does not, in itself, effect any substantial long-term environmental or ecological benefits". Although immediate effects during dredging tend to have a "minor negative impact" as you state in the second sentence of the paragraph, we believe long-term effects may be beneficial. There is no scientific proof available today regarding the long term effects of removal.

5. Paragraph 6.2 commences as follows:

   > "The polluted materials are removed annually and disposed of into the diked disposal island, and the unpolluted sediments are dumped into open water. This is the most economical alternative, but it is ecologically detrimental."

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ATTN: Chief, Environmental Resources Branch
P. O. Box 1027
Detroit, Michigan 48231

January 15, 1975

We do not think it proper to state categorically that water dumping of polluted material is ecologically detrimental. We refer to Pages 99 and 100 of the Final Environmental Statement prepared by your office for the Confined Disposal Facilities at Pointe Mouillie for Detroit and Rouge Rivers, dated 1974, which deals with this problem. We quote commencing with the third sentence on Page 99:

"However, very little is known about the release of such materials or how much damage is caused by open lake dumping as compared to the dredging operation itself, which is accompanied by a large, observable increase in turbidity caused by the suction heads, passage of the vessel, and other phases of the operations. Commercial vessels also disrupt the bottom sediments as they pass through the channels exposing toxic and soluble materials to the water column. A quantified comparison of the ecological damage caused by vessel passages to the damage caused by dredging regardless of the disposal method has not been made and no good data exist to perform the analysis required to do so. Further, a comparison of the adverse effects of open lake dumping for this project to the adverse effects of the barrier dike containment facility and the high cost of construction of the facility has not been made. Since the effectiveness of containing polluted spoil is not known, it appears that this present proposal is motivated and demanded more by political necessity than by scientific determinations. In a report entitled: 'Disposal of Polluted Dredgings from the Great Lakes Area' by Krisek and Karadi, this problem was discussed. They said:

'Despite ample evidence that many maintenance dredgings are highly polluted, there are no conclusive reports to indicate that the abandonment of open water disposal considerably improves the lake environment or substantially decreases the danger of further ecological deterioration. Although the banning of open water disposal appears at first impression to be an effective way of improving the quality of the lake environment, a cursory evaluation of the relative improvement achieved and the cost thereof does not provide such a clear picture. For example, less than 10% (perhaps on the order of 2% to 5%) of the sediment deposited in the Great Lakes area is even affected by dredging operations,and, of the material dredged, less than one-half is judged to be polluted and deposited within diked containment areas. Hence, based on the assumption that the latter disposal method is completely effective in removing pollutants from the lake environment, less than 5% of these pollutants will be removed.'"

U.S. Army Engineer District, Detroit
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Detroit, Michigan 48231

January 15, 1975

We believe a similar explanation should be inserted in the Toledo Statement, and for that matter, in all Environmental Impact Statements dealing with dredging. Future studies could indicate that open water disposal is the best alternative.

These comments may point up some items that have not been considered in the Draft Statement. We hope they will be given consideration in preparing the Final Environmental Statement.

Yours very truly,

THE NATIONAL ASSOCIATION OF
RIVER AND HARBOR CONTRACTORS

Barry Sullivan
Washington Representative

TOLEDO METROPOLITAN AREA COUNCIL OF GOVERNMENTS
420 Madison Ave. / Suite 725 / Toledo, Ohio 43604 / Phone (419) 241-9155

February 19, 1975

Colonel James E. Hays
Department of the Army
Corps of Engineers
Detroit, Michigan 48231

Dear Colonel Hays:

The enclosed Environmental Impact Assessment of Maintenance Dredging of Polluted Sediments in Toledo Harbor, Michigan, December, 1974 is for your review and consideration. Hopefully these comments will assist you in developing the final environmental impact statement.

It is in the interest of the Toledo Metropolitan Area Council of Governments to provide the Corps of Engineers with input, both as a regional government and as a concerned associate regarding environmental issues in Maumee River and Maumee Bay. We are pleased to have this opportunity to comment on the Environmental Impact Statement.

As always, we are willing to cooperate with your agency in areas of mutual interest. Any questions concerning these comments will be welcomed by our Council.

Sincerely,

Calvin M. Lakin
Executive Director

CML:dew

Enclosure

TOLEDO METROPOLITAN AREA COUNCIL OF GOVERNMENTS

C O M M E N T S

Environmental Impact Statement
Maintenance Dredging of Polluted Sediments
In Toledo Harbor, Michigan

1. Title Page
   Maintenance Dredging of Polluted Sediments
   In Toledo Harbor, Michigan
   Delete: Polluted and Michigan
   Add: Ohio
   Reason: (A) Polluted implies function of project. The function of the project is to maintain open channels for shipping.
   (B) The harbor is located in Ohio.

2. Page i
   (A) Title should be changed (same as above).
   (B) Item 3(A) Environmental Impacts should be titled:
   3. Environmental Impacts
   (a) Positive Environmental Impacts
   (b) Negative Environmental Impacts
   Reason: The way it is presently structured items in (a) are both negative and positive and items in (b) repeat what are in (a).
   (C) Item 3(A) last phrase, first sentence
   1. "and a reduction of possible fish populations" should read "and a possible reduction of fish populations".

3. Page 1, Section 1.1 General
   (A) 1st sentence
   Delete: Assigned
   Add: Authorized
   Reason: Corp was authorized to perform needed dredging, not assigned it. The Corps determines the need and Congress authorizes.
   (B) The last sentence implies dredging, by retaining open waterways, provides for economic advancement and increased recreation opportunities. This is not necessarily correct and should not be used as a justification statement for dredging. The justification for dredging should be based on maintenance for current shipping. If additional benefits result (i.e. recreation, economic advancement), they should be included in the impacts of dredging section.

4. Page 1, Section 1.2 Purpose
   (A) 1st Sentence
   Delete: Polluted
   Reason: Implies a justification for dredging. If removal of polluted material is a benefit, it should be included in the impacts of dredging section.

5. Page 1, Section 1.3 Authorization and Dimensions
   (A) 2nd Section
   Authorization does not provide, by definition - it empowers the Corps of Engineers to provide - for a 28 foot channel etc.
   (B) 3rd Section
   Does not refer to river mile or lake (bay) mile markers
   (C) Section 1.3 needs to be more definitive (e.g. the total length of channelization is not mentioned, cannot relate these descriptions directly to Figure 1, there is no definition with regard to depth of sediment being dredged etc.).

6. Section 1.4 Materials to be Dredged
   (A) 1st Sentence - classified as polluted
   this should be documented by source establishing standards for pollution (OEPA, USEPA)
   (B) Are these samples representative of channel sediment or bay sediment. If this channel continuously refills, is it refilling with bay sediment or new sediment of different characteristics.
   (C) Are these the latest samples taken - 8 years old

7. Section 1.5 Description of Dredging Operations
   (A) Approximately 50% of the total surface area described in Section 1.3 is classified as non-polluted (total area = 6,449,100 sq. yds., total non-polluted area miles 12-25 3,866,720 sq. yds). Why is the ratio of dredged material (polluted) to dredged material (non-polluted) annually 80% to 20% (940,000 to 235,000 cubic yards).
   (B) 2nd Sentence
   States polluted material requires containment disposal. This section is a description of dredging operations. It hasn't been established that polluted material inherently requires containment. This section should state only that the polluted material is being contained as a part of the dredging operations.
   (C) Last Sentence
   Exact area of open lake dumping should be defined in addition to quantity dumped.
   (D) 2nd Paragraph - Last Sentence Pg. 5
   Meaning is unclear in parenthesis (dredging, also bottom dredging disposal of unpolluted material). Does this dump and dredge at the same time, if so, where?
   (E) What about the 170,000 cubic yards of permit dredging each year. See Page 3 of Final Environmental Impact Statement - Confined Disposal Facility, February, 1974.

8. Section 2.3 Climatologic
   (A) Last Sentence states that Toledo has fewer high water-level rises. This may be true, but says nothing in regard to Toledo's relative position topographically. This implies Toledo is not affected by high water levels because it has fewer rises; the converse is true because of its low relief.

9. Section 2.4 Population
   (A) 2nd Sentence - Source of Forecast is not identified.
   (B) Last Sentence - current housing shortage exists and will continue to exist based on all known studies by TMACOG and Toledo-Lucas County Planning Commission.
   (C) Growth areas referred to are incorrect - Northern Wood County (South and Southeast) slower growth areas? Document please.

10. Section 2.5 Commerce
   (A) Table C Passengers?
   There are no passenger liners using the harbor.

11. Section 2.7 Sediment
   (A) If 2,212,000 tons of total solid is carried by the Maumee River into the bay and most of this (??) is carried into the lake, what is being dredged (1,175,000) in the river and bay?

12. Section 2.8 Biologic Activity
   (A) 1st Section - a highly enriched aquatic system is not by necessity or typically loaded with bacterial communities such as those found in Maumee Bay.
   (B) Last sentence - What are the benthic invertebrates which are pollution tolerant? Are they any different than species which would be found here if the sediment was non-polluted?

13. Section 2.10 Fish
   (A) 2nd Sentence - Spawning areas should be identified. Spawning runs should also be described.

14. Section 3 Relationship of the Proposed Action to Land Use Plans
   (A) Continued maintenance dredging has a serious impact on land use - via diked dredge disposal, necessitating construction of facility #3. Under NEPA 1969 all direct and indirect relationships caused or created by an action should be addressed.
      1. Potential port development by land mass extension (Port Facility #3)
      2. Potential port development-highway construction across Maumee Bay serving port.
      3. Increased industrial development in proximity to expanded port facilities.

15. Section 4 Probable Impacts of Proposed Actions of the Environment
    (A) 1st Sentence
        Delete: Is necessary to
        Add: Will
        Reason: Is necessary to is a justifying statement for the impact, which isn't necessary.
    (B) 2nd Paragraph - This is a reiteration and further justification of the 1st paragraph - delete.
    (C) 3rd Paragraph - 1st Sentence - bottom habitats may improve. 2nd Sentence - water quality around dredged areas may improve. Studies have not been conducted to prove whether shifting bottom sediments after dredging discounts any possible benefits from dredging.
    (D) A positive impact is the removal of polluted material from the bay floor simply because it reduces the total volume of polluted material.
    (E) A possible positive impact by diking are increased feeding areas for wildfowl by increasing habitat for fish (increases lineal feet of shoreline).

16. Section 4.2 Dredging Impacts
    (A) Dredging Impacts should be titled Negative Impacts since 4.1 was titled General Positive and Beneficial Impacts.
    (B) 1st Sentence should be stated more objectively without justification.
    (C) 2nd Paragraph - 1st Sentence structured unclearly.
        1. 2nd Sentence should be stated without statements of justification.
    (D) 3rd Paragraph - Grammatically incorrect.
    (E) 4th Paragraph - 1st Sentence - the minor negative impact of main concern - should be restructured.
        Suggestion: A negative impact of major concern, though minor in its total impact, is turbidity encountered from hopper bins overflow.
    (F) 4th Paragraph - Source of pollution need not be identified. Impacts of dredging operations and related turbidity should be discussed in this paragraph. The emphasis under 4.2 should be dredging impacts only.
    (G) 5th Paragraph
        1. Turbidity caused by dredging should be identified in terms of standard turbidity levels when no dredging is in operation. In this manner the losses or negative impacts of dredging and associated turbidity could be assessed.
        2. Last Sentence - immediate dredge areas should be more specific.
    (H) The Last Paragraph
        1. 1st Sentence - existing poor water quality is not a reason for escaping responsibilities to evaluate the impacts of an operation, which may further degrade water quality. Difficulty of evaluation is not of necessity caused by lack of technology, equipment, or personnel.

2. 2nd Sentence - the magnitude of the effect on water quality by dredging is not impossible to determine. The technology for determining it is available and should be utilized where economically feasible.
3. Dredging samples before, during, and after dredging have never been taken in a concerted effort. Conditions could not be said to be temporary and will return to original levels unless sampling had taken place.

17. Section 4.3 Disposal Impacts
(A) Disposal Impacts - should be a subheading under 4.2 as an indirect impact.
(B) 1st Sentence - any impact from spillage may be minimal, however, it isn't the only possible impact.
(C) This section should include -
1. An examination of possible impacts caused by wildfowl feeding on carrion and other polluted organisms at the disposal site.
2. Leachate seepage, which currently exists at Cullen Island site.
3. Decay of exterior wall of Cullen Island which allows polluted material to return to bay.
4. Aesthetic impact of a walled diked area in what was open bay water. This visually effects Point Place residents and soon to effect some residents of East Toledo and Oregon.

18. Section 5 Unavoidable Adverse Environmental Effects
(A) 1st Paragraph - 2nd Sentence should not be in the introductory paragraph - this statement is one concerning an unavoidable impact and should be in the succeeding paragraphs.
(B) 2nd Paragraph, 1st Sentence - effect of dredging will be slight should read: probably will be slight.
(C) 2nd Paragraph, 1st Sentence - and will be difficult to evaluate, why? (technology, unavailable funding)?
(D) 3rd Paragraph, 2nd Sentence - The use of the words stable and non reactive should be clarified to mean, by their physical position (out of solution, reduced surface area) these pollutants are stable and non reactive. The implication in the original sentence is one of chemical stability and non reactivity.
(E) 3rd Paragraph, 4th Sentence - fish population studies have not been conducted to substantiate this movement of fish.
(F) Recolonization may occur, but whether the same species recolonize has not been documented.

19. Section 6 Alternatives to the Proposed Actions
    (A) 1st Paragraph - item 4 and 5 should read 4) Diked Dredge Disposals and 5) Other Disposal Methods.

20. Section 6.1 Discontinuation of Maintenance Dredging
    (A) 2nd Sentence - how severely would the accumulation of sediments reduce utilization of the port. If the entire channel is not dredged each year, what substantiates the 2 year figure.
    (B) Maintenance dredging is not being performed to prevent pollution entering Lake Erie, this is a benefit received from dredging. This should not be used as a justification for dredging, since it was not the reason dredging was performed in the beginning.

21. Section 6.2 Open Lake Dumping of All Sediments
    (A) 2nd Sentence - should read: <u>This apparently is the most economical alternative</u>. An unsatisfactory cost/benefit analysis in "Confined Disposal Facility for Toledo Harbor, Ohio" doesn't address social or environmental cost, therefore it should not be used here to justify this method as the least cost effective.
    (B) 1. 2nd Paragraph should be Section 6.3
        2. What cost study analysis or feasibility study concluded this method wasn't economical.
        3. Last paragraph should be under 6.4 This paragraph should discuss Diked Dredge Disposal as an alternative and state its economic cost/benefit (physical, social and environmental cost).
        4. A 5th possibility which is not addressed is shoreline development using the unpolluted dredge. South Maumee Bay shore erosion possibly could be checked with this method. Access may be a problem but it should be addressed.
        5. A 6th possibility which is not addressed in this impact statement and insufficiently examined in "Confined Disposal Facility for Toledo Harbor, Ohio", is land disposal. A complete cost analysis should be completed on all possibilities.

22. Section 7.1 Short Term
    (A) The intent of this section is to compare relative values of short term use of the environment and long term productivity by maintenance and enhancement. Continued use of the Toledo Harbor for shipping is the cause not the effect. The effect should be what shipping (short term use) will do to the local economy and the environment of the bay.

23. Section 7.2 Long Term
    (A) This section should mention the multiplier effect of port development and growth. It should reiterate gains from shipping in a long range program. In addition, it should develop long range benefits realistically by objectively stating long range environmental committments and continued disposal needs. This section should objectively prove the long range productivity gain over the short run losses.

24. Irreversible and Irretrievable Committment of Resources Which Would Be Involved in the Proposed Action Should It Be Implemented.
    (A) The 150 acres of channels and turning basins committed to shipping which could not exist without dredging should be mentioned.
    (B) The 248 acres of diked enclosure being built across the channel as a depository for dredged material should be mentioned. This is committing the total bay end river to 400 acres to a fixed useage.
    (C) The 2800 acres which may be committed to diking if alternative methods of disposal are not developed in 10 years should be addressed.
    (D) Current flow in the bay will be permanently altered.
    (E) Temporary and possibly permanent loss of fish habitat and/or existing wildfowl feeding areas in the bay will be committed by diked disposal.
    (F) The short and long range irretrievable committments must be addressed.

TOLEDO NATURALISTS' ASSOCIATION

Reply should be sent to

3 Ginger Hill Lane
Toledo Ohio 43623

February 1,1975

Remarks on behalf of the Toledo Naturalist Association On the Environmental Impact Statement on Maintenance Dredging of Polluted Sediments in Toledo Harbor.

In the statements we have made previously we have not objected to the maintenance dredging for the Toledo Harbor in Maumee Bay. We have objected to the disposal site location in the Bay. There would seem to be little use to make further protest. We can only say that the decision was made in favor of the money interests and not in the long term interest of the environment.

The law has been followed to the letter as was expected in the problemof maintenance dredging. But this is , in general practice, a failure to take into account of the social costs of resource exhaustion an important element in cost benefit anaysis in such things as the condition of the fishery.

We are in a state of continuing crisis, because we are willing to spend more for what we want , in the economy than we are willing to spend on upgrading a deteriorating environment.

Environmental impact statements are a step forward in managing the environment , but they still fall short, because there is insufficient knowledge of all of the factors involved.

Mrs. Neil Waterbury
Conservation Chairman
Toledo Naturalist Ass'n

SOUTHWESTERN REGIONAL OFFICE
John L. Franson, Representative
Louisiana
New Mexico
Texas
(Mexico)

NATIONAL AUDUBON SOCIETY

2507 ROGGE LANE, AUSTIN, TEXAS 78723 — PHONE (512) 928-2047

January 2, 1975

Mr. P. McCallister
Chief, Engineering Division
U.S. Army Corps of Engineers
P.O. Box 1027
Detroit, Michigan 48231

RE: NCEED-ER

Dear Mr. McCallister:

I have just received the draft environmental statement sent to us on the Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Ohio and Michigan. This was forwarded to me from my old address in the central midwest, 1020 E. 20th Street, Owensboro, Kentucky 42301. This was the former Central Midwest Regional Office for the National Audubon Society.

As you can see by this letterhead, I am now representing the Southwest Regional Office for the National Audubon Society and so I will forward your draft statement to our new Central Midwest Representative. You probably would like to take note of his name and address so that future correspondence regarding that region (Illinois, Indiana, Kentucky, Ohio and Tennessee) can be sent to him. It is as follows:

MR. MYRON SWENSON
CENTRAL MIDWEST REPRESENTATIVE
NATIONAL AUDUBON SOCIETY
RT. 1, BOX 19
MAUCKPORT, INDIANA 47142

Sincerely,

John L. Franson

John L. Franson
Southwest Regional Representative

5838 Lakeside
Toledo, Ohio 43611
Dec. 29, 1974

Mr. P. McCallister
Chief, Engineering Div.
Corps of Engineers
P.O. Box 1027
Detroit, Mich. 48231

Dear Mr. McCallister,

The draft EIS on "Maintenance Dredging of the Polluted Sediments in Toledo Harbor, Michigan" should read "-- Toledo Harbor, Ohio", shouldn't it?

P. 16 in my copy was double-printed. Could you send me 5 copies that have a p. 15 printed once and a p. 16 printed once?

Sincerely

Mrs Reed E. Parks

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN STREET
CHICAGO, ILLINOIS 60604

June 20, 1975

Mr. P. McCallister, Chief
Engineering Division
U.S. Army Engineer District, Detroit
P.O. Box 1027
Detroit, Michigan 48231

Dear Mr. McCallister:

This letter is in response to your inquiry of June 10, 1975 for clarification of the pollutional classification of bottom sediments in the Toledo Harbor Navigation Channels beyond mile point 5. This inquiry was with regard to a statement made in our March 27, 1975 comments to you on the Draft Environmental Impact Statement for maintenance dredging in Toledo Harbor and our February 13, 1974 letter on bottom sediment classification, to Mr. Michael Davinich, Chief, Construction-Operations Division. The statement in our March 27, 1975 comments that specified "... we have not classified bottom sediments in the channel from mile point 5 and beyond" was in error since we did classify that the remaining portions of the approach channel were unpolluted in our February 13, 1974 letter.

Our March 27, 1975 comments first expressed concern over the disposition of bottom sediments beyond mile point 5. While we commented on the August 8 Public Notice for Maintenance Dredging at Toledo Harbor on September 27, 1974, we were concerned only with standard measures for mitigation of the project's water quality effects. The comments on the EIS for the confined disposal facility were specific to the proposed disposal site and its associated environmental effects and did not relate to the actual physical dimensions of the project area with respect to bottom sediment classification and the required maintenance dredging. Our intent was to comment on these aspects in the EIS for maintenance dredging.

In view of the time restraints faced by your office for completing the Final EIS for maintenance dredging at Toledo Harbor and the design for the Toledo Harbor confined disposal facility, we wish to clarify our current position on the harbor's pollutional classification. All dredge material taken from the upstream project limits in the Maumee River to the 5-mile buoy in the approach channel is classified as polluted and unacceptable for open lake disposal. However, for those portions of the project area beyond mile point 5, we defer judgment on its pollutional classification until an adequate bottom sediment survey of this area is completed and its results are evaluated. We cannot assume those portions of the harbor beyond mile point 5 to be unpolluted without a detailed sediment survey. Furthermore, since the possibility (as indicated in our March 27, 1975 comments) of these bottom sediments being polluted exists because of the

general consistency of sediment criteria at each of the survey stations out to mile point 5, we cannot concur with unrestricted disposal of spoil material beyond mile point 5 until its actual pollutional status is known. However, we do not recommend a change in the design of the confined disposal facility. Until such time that a determination is made of its pollutional classification, we request that the following actions be incorporated in the maintenance dredging operations of sediments beyond mile point 5:

a) Dredging will be confined to shoaled portions of previously dredged essential navigation channels.

b) Non-essential project areas will not be dredged.

c) Dredge operations will be such as to preclude any spillage of dredged material between the dredging location and the disposal area.

d) Disposal of the dredged material will be strictly confined to authorized dumping grounds previously used for this purpose.

e) The dredge will dump materials only when stationary over the disposal area to minimize sediment dispersal during this operation.

f) Hopper washout will be performed only as necessary to maintain operability of dredging equipment and will be performed only while stationary over the disposal area.

If you need any additional information or clarification, please contact Mr. Gary Williams at 312/353-5756.

Sincerely yours,

Gary A. Williams

for Donald A. Wallgren
Chief,
Federal Activities Branch

MAINTENANCE DREDGING OF THE FEDERAL NAVIGATION CHANNEL AT TOLEDO HARBOR, OHIO

APPENDIX D

GLOSSARY

Absorption	- Ability to attract and hold, as water in a sponge.
Accretion	- Natural or artificial build-up of land by air or water deposition.
Adsorption	- Ability to attract and hold, as paint on a board.
Aerobic	- Any biologic process which requires oxygen to function.
Alkalinity	- A measure of the capacity of a solution to neutralize hydrogen ions and is associated with pH.
Anadromous	- Type of fish that ascend rivers from the sea to spawn.
Anaerobic	- Any biologic process which does not require oxygen to function.
Anoxic	- Without oxygen. Biological decay of organic and nutrient material in bottom sediments may consume dissolved oxygen in the water and create an anoxic condition at the water-sediment interface.
Aquatic Plants	- Plants that grow in water, either floating on surface, growing up from the bottom of the body of water or growing under the surface of the water.
Artificial Nourishment	- The process of replenishing a beach by artificial means.
Barge	- A flat bottomed motorless boat used for transporting heavy loads (must be moved by tug or tender).
Baymouth Bar	- A bar extending partially or entirely across the mouth of a bay.
Benthic	- Under water at the bottom of stream, lake or harbor.
Benthic Region	- Bottom of a body of water.
Benthos	- Bottom dwelling organisms.
Biomagnification	- Increasing accumulation of a substance (such as mercury) from organism to organism in a food chain.

Biomass	- Total amount of living material in an area.
Biota	- All the species of plants and animals occurring within a certain area.
BOD	- Biochemical Oxygen Demand. A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water.
Breakwater	- A long narrow (rubble mound) pile of rock or a concrete structure in the water designed to break or moderate the effect of storm driven waves. Usually placed out into the water from shore at an entry channel to provide safer boat or ship navigation during stormy weather.
BSFW	- Bureau of Sport Fisheries and Wildlife (Federal).
Bulkhead	- A structure separating land and water areas, primarily designed to resist earth changes.
Bulkhead Line	- A "line" in the harbor beyond which a dock, pier, wharf or filled area may not extend.
CDF	- Confined Disposal Facility. Confined diked disposal area for dredged sediments.
Chelate	- Binding of heavy metal ions to organic (lignin) fibers; the ions may then be transported by the fibers as they float in the water.
Climate	- The average weather over time for a particular place.
COD	- Chemical Oxygen Demand. The amount of oxygen required to oxidize organic and oxidizable inorganic compounds in water.
Coliform	- Any of a number of organisms common to the intestinal tract of man and animals, whose presence is an indicator of pollution.
Conductivity (Specific Conductance)	- A measure of a solution's capacity to convey an electric current.
Contaminant	- Something which will in some way degrade or dirty another thing or a natural system (such as oil in a river).

Conventional Pollutants	- Pheonols, phosphorous, nitrogen, iron, oil and grease, solids and heavy metals other than mercury.
Copper	- Copper (Cu) is a heavy metal which in trace quantities is essential to life, but which in greater amounts is toxic to life.
Cultural	- Produced by man or resulting from man's actions.
Datum Plane	- The horizontal place to which soundings, ground elevations, or water surface elevations are referred. Also REFERENCE PLANE. The plane is called a TIDAL DATUM when defined by a certain phase of the tide.
Depth, Project	- The depth below the official (LWD) lake water level to which navigation channel or basin dredging by the Corps has been authorized by Congress.
Depth, Control	- The actual depth of water that is available between the water surface and the lake or river bottom. It may be greater than project depth immediately after overdredging, or less than project depth if siltation has occurred; usually less than project depth.
Diesel Fuel	- Light fuel oil burned in diesel motors.
Diffusion	- Movement of one substance through another; for example, an odor in the air, a color in the water. Distance from the source results in more diffusion and less intensity.
Dike	- A mound of earth, sand, clay or other substance on land or in the water designed and built to retain something behind it.
Dissolved Solids	- The total amount of dissolved material, organic and inorganic, contained in water or wastes.
DNR	- Department of Natural Resources (State).
DO	- Dissolved Oxygen. The oxygen freely available in water. Unpolluted water will contain more DO than polluted water.
Dock	- A (permanent) structure projecting out from the shore to which a boat or ship can tie up.

Dredge - The equipment used to, and/or at the act of, removing muck, sand, gravel or stone sediments from harbor and/or navigation channel bottoms.

Dredge, Dipper - A barge mounted shovel, powered by steam or diesel, which operates by forcing its bucket into bottom sediments and scooping out material. Generally used to dredge sand, gravel and rock. Operates with about 80% solids 20% water.

Dredge, Clam-Shell - A barge mounted crane with a split-bucket or clam-shell suspended from it, powered by steam or diesel, which operates by dropping its clam-shell to the bottom by gravity where it is closed and lifted, along with the sediments it catches, from the bottom by wire cables. Generally used for dredging soft sediments, sand and gravel.

Dredge, Hydraulic - A barge or ship mounted vacuum suction device, sometimes fitted with an "eggbeater" type cutter head, powered by steam or diesel, which operates by breaking up the sediments with the rotating cutter head and may pump the material from the bottom through pipes to a discharge point at some distance from the equipment, in the water, on land or into a confinement facility. Generally used for dredging muck, soft sediments or sand. Operates with about 20% solids and 80% water.

Dredge, Peterson - A small bottom sediment sampling device which operates somewhat similar to a clam-shell dredge. Usually used to sample hard clay, sand, gravel or stoney bottoms.

Dredge, Ponar - A bottom sediment sampling device, smaller than a Peterson, which operates similar to a clam-shell dredge. Usually used to sample soft muck, sand and fine gravel sediments and associated benthos.

Dredge, Eckman - A bottom sediment sampling device, smaller than a Ponar, which operates similar to a clam-shell dredge, can be operated and retrieved by hand. Usually used to sample soft muck and sand and associated benthos.

Dredging - A method for deepening and widening streams, swamps or coastal waters by scraping and removing solids from the bottom to restore the authorized depths in the established projects.

Dunes	- Ridges, mounds or hills of loose, windblown material, usually sand. Stable dunes are those which are covered with vegetation and generally not readily susceptible to erosion by wind or water runoff. Unstable dunes are those which are bare of vegetation and subject to movement or erosion by both wind and water.
Dynamic	- Active processes - relating to movement.
Ecology	- The study of organisms and their physical environment.
E.I.A.	- Environmental Impact Assessment
E.I.S.	- Environmental Impact Statement. A document prepared by a Federal agency on the environmental impact of its proposals for legislation and other major actions significantly affecting the quality of the human environment. Environmental impact statements are used as tools for decision making and are required by the National Environmental Policy Act (NEPA).
Environment	- Total surroundings. Environment may refer specifically to man or animal, natural or cultural, physical, chemical, biological, social, economic or any combination of the above.
Environmental Impact	- A word used to express the extent or severity of an environmental effect.
EPA	- Environmental Protection Agency.
Erosion	- The wearing away of the land by the action of wind, water, gravity or a combination thereof. Shoreland erosion on the Great Lakes is most often a result of a combination of wind driving waves beating upon the shore and forming littoral currents, and high water levels.
Escarpment	- A high vertical rock cliff or bluff which rises sharply from the water.
Eutrophication	- Natural processes which result in water quality reduction via nutrient enrichment. Eutrophication over time changes open lakes to swamps and eventually to dry land.

Evolution	- Change over time.
Fauna	- Animals on land or in the water.
Fecal Coliform	- A group of organisms common to the intestinal tracts of man and of animals.
Flora	- Plants on land or in the water.
Fluvial	- Relating to sediment deposition by moving (river) water.
Food Chain	- Movement of food and energy from one form of life to another; for example, algae to zooplankton to fish.
Groin (British, GROYNE)	- A shore protective structure (built usually perpendicular to the shoreline) to trap littoral drift or retard erosion of the shore. It is narrow in width, and its length may vary from less than one hundred to several hundred feet (extending from a point landward of the shoreline out into the water). Groins may be classified as *permeable or impermeable*; impermeable groins having a solid or nearly solid structure, permeable groins having openings through them of sufficient size to permit passage of appreciable quantities of littoral drift.
Groundwater	- Water that exists in a saturation zone of the earths crust.
Harbor	- An area of water along the shoreline which is protected and affords anchorage to commercial and recreational water craft.
Impact	- The effect of one thing upon another. "Environmental" impacts may affect any one or combination of elements in the total environment and may be of positive or negative impact and of long or short duration.
Impermeable	- Able to confine water without any seepage.
Interface	- The point at which two substances, such as water and bottom sediments, come together.
Jetty	- A solid structure (somewhat similar in appearance to a boat dock) which projects from the shore for control of longshore drift erosion or sedimentation of the beach.

Lakers	- "Boats" designed and built specifically for hauling bulk cargo such as iron ore, taconite pellets, coal or grain on the Great Lakes. "Average" present day lakers may be between 600 and 700 feet long and about 80 feet wide and carry 10,000 to 20,000 ton loads. New lakers are being built, however, which are 1,000 feet long, 100 feet wide and able to carry 40 to 50 thousand tons.
Latitude	- Distance in degrees north or south of the Equator (0^{o}).
Leach	- To remove a substance by water filtration or percolation.
Lead	- Lead (Pb) a heavy metal which is toxic to life.
Littoral	- The shallow waters that extend along the edge of a lake or sea.
Littoral Deposits	- Deposits of littoral drift.
Littoral Drift	- The bottom materials moved in the littoral zone under the influence of waves and current. Direction of movement or "transport" of littoral materials depends upon wind and wave direction.
Longitude	- Distance in degrees east or west of a line (0^{o}) which passes from north to south through Greenwich, England.
Longshore Current	- Somewhat similar to littoral drift.
Low Water Datum	- LWD. An approximation to the plane of mean low water that has been adopted as a standard reference plane.
Marsh	- A tract of soft, wet or periodically inundated land, generally treeless and usually characterized by grasses and other low growth.
Methylation	- Change from an inorganic to an organic form usually as a result of bacterial action. For example, the metal mercury is relatively non-toxic if eaten; however, methyl-mercury is extremely toxic if eaten and can be transmitted via food chains.

Mercury	- A heavy metal, highly toxic if breathed or ingested. Mercury is residual in the environment, showing biological accumulation in all aquatic organisms, especially fish and shellfish.
mg/Kg	- Milligram per kilogram.
Monitoring Program	- To study the amount of pollutants present in the environment.
Mooring Facility	- A place where a ship is fastened.
Navigation Aids	- Lights, horns, bells, symbols placed and maintained by the U.S. Coast Guard to aid boat and ship navigation. Navigation aids are often placed on the outermost end of Corps breakwaters and piers.
Nekton	- Swimming aquatic insects and fish.
Nutrient	- Elements or compounds essential as raw materials for organism growth and development; for example, carbon, oxygen, nitrogen, and phosphorus.
Oligotrophic	- (Of a lake) weak in production due to a low supply of nutrients, resulting in a clean and clear body of water; in the past, the Great Lakes have been oligotrophic.
Organic	- Material of life origin; leaves, sticks, animals, fish.
Peninsula	- A "Finger" of land projecting out into, and surrounded on three sides by water.
Percolate	- Downward flow or infiltration of water through the pores or spaces of a rock or soil.
Permeable	- Able to allow water to seep through.
pH	- A measure of the relative acid or alkaline state of water. pH is measured on a scale of 0 to 14. A pH of 7 is neutral, a pH below 7 is acid, a pH above 7 is alkaline. Rainwater is usually slightly acid.

Phenols	- A group of organic compounds that in very low concentrations produce a taste and odor problem in water.
Phosphorus	- An element that while essential to life, contributes to the eutrophication of lakes and other bodies of water.
Phytoplankton	- The plant portion of plankton.
Piers	- Permanent structures constructed of stone, steel, cement or a combination of those materials, which are used to define and stabilize entry channels from the open lake into a harbor.
Plankton	- Small aquatic plants and animals whose movement is controlled by river, harbor and lake currents.
Pocket Harbor	- A harbor which does not have a river or stream flowing through it, which carries and deposits sediment loads.
Pollution	- Any change in water quality that impairs it for the subsequent user. These changes result from contamination of the physical, chemical, or biological properties of water.
Port	- A point (usually a harbor) at which ships load and unload commercial cargo.
ppm	- Parts per million.
ppb	- Parts per billion.
Pumpout Station	- A temporary dock where a connection is made between land and dredge piles; a booster pump may be used.
Revetment	- A permanent structure built of sheet steel piling or concrete placed to keep channel or harbor banks from caving into the water.
Riparian Right	- The right of an owner of land bordering on a stream or lake to have access to, and use of, the shore and water. The use of this water is restricted to riparian landowners, and the right is automatic, not created by use or forfeited through disuse.
Riprap	- A layer, facing, or protective mound of stones randomly placed to prevent erosion, scour, or sloughing of a structure or embankment; also the stone so used.

Scientific nomenclature - Scientific nomenclature of animals requires (1) that each species and genus found in the world shall have a name that is independent of change, such as pertains to common names used in many languages; (2) that each species and genus shall have separate names duplicated by none which refer to some other species or genus; and (3) that different names shall not be applicable to any one species or genus. The following is a breakdown of Categories of Higher Rank than Species and Genus:

Kingdon
Phylum
Class
Order
Family
Tribe
Genus
Species

Scow - A barge equipped with trap-doors in its bottom which is used for moving and dumping dredge spoil.

Secchi Disc - An eight inch diameter disk, divided into alternate black and white quadrants supported from its center by a hand line, which is dropped into the water to visually gauge light penetration.

Sediments - Clay, sand, gravel or stones which have been eroded from the land or from beneath the water, have been transported by river or lake currents, and re-deposited.

Seawall - A structure separating land and water areas primarily designed to prevent erosion and other damage due to wave action.

Seiche - Fluctuations above or below "normal" water level caused by wind, barometric pressure or a combination of both. A seiche usually does not last for more than several hours at any particular time or place.

Sheet Steel Piling - Interlocking lengths of steel driven into a stream, lake or harbor bottom next to the shore to prevent storm, wave or ship damage.

Shoal	- A place where water is shallow, sometimes created by a sandbar, in the shipping channels, created by deposition of eroded material.
Shoreline Protection	- Structural measures designed for placement along the shore to relieve erosion and flooding damages. Examples of structural measures are protective beaches, seawalls, groins and revetments.
Side Casting	- The disposal of dredged sediments off to the side of the channel or basin being dredged. Side cast disposal may be either in the water or on land.
Silt	- Finely divided particles of soil or rock. Often carried in cloudy suspension in water and eventually deposited as sediment.
Spoil	- Sediments which have been dredged from beneath the water.
Stagnation	- Lake of motion in the water that tends to entrap and concentrate pollutants.
Substrate	- Any substance used as an attachment point by a microorganism.
Surface Water	- Atmospheric water that runs off to collect in streams, ponds, or lakes, swamps, etc.
Tender	- A boat smaller and less powerful than a tug, but used in essentially the same way.
Tertiary	- Third in order in terms of importance. Also, refers to a final or ultimate process or effect which is dependent upon those processes or effects which have gone before.
TKN	- Total Kjeldahl Nitrogen. A measure of the ammonia and organic nitrogen, but does not include nitrite and nitrate.
Topography	- The configuration of a surface including its relief, the position of its natural and man-made features.
Tug	- A boat with a powerful motor used to move barges, dredges or other boats or ships.
Turbidity	- A cloudy condition in water due to the suspension of silt or finely divided organic matter.

Volatile Solids (Total)	- A measure of the organic material that could decompose and thus exert an oxygen demand on a body of water.
Van Dorn Bottle	- A glass water sampling device which is constructed differently but is used in essentially the same manner as a Kemmerer.
Water Quality Criteria	- The level of pollutants, with respect to the chemical, physical, and biological characteristics, that affect the suitability of water for a given use.
Wave	- A ridge, deformation, or undulation of the surface of a liquid.
W.E.S.	- Waterways Experiment Station of the U. S. Army Corps of Engineers at Vicksburg, Mississippi.
Wharf	- A (permanent) structure alongside a channel or harbor edge to which a boat or ship can tie up.
Zinc	- Zinc (Zn) is a heavy metal which in trace quantities is essential to life, but which in greater quantities may be toxic to life.
Zooplankton	- Planktonic animals that supply food for fish.